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OF NEW ZEALAND

MANUFACTURING
IN
NEW ZEALAND

AS a nation is aware of its parts and capabilities, so its people may be inspired to new endeavours. Undoubtedly, many are unaware of the versatility of New Zealand manufactories : this volume essays to give a glimpse of their wide role in the nation's economy.

This work has been made possible by the generous financial and research aid of that cross section of the industry here presented.

'Manufacturing in New Zealand' was compiled and printed during the years 1958-59 from information current in that period.

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Preface

by RT HON WALTER NASH

THE importance of New Zealand as a source of agricultural produce tends to overshadow the economic significance of her manufacturing industries, and I am pleased through this preface to have the opportunity of lending support to a fuller appreciation of the extent and importance of manufacturing in New Zealand. Both economically and socially, New Zealand is becoming increasingly dependent on her manufacturing industries. Our future prosperity to a great extent depends on the degree of success with which industry can extend the diversity, quality and competitiveness of its products and also provide ever increasing opportunities of employment for our rapidly growing population. This is a great and a grave challenge, but I believe that the initiative and enterprise of manufacturing concerns operating under conditions favourable to development can meet this challenge. It will be the endeavour of the Government to provide a climate of growth which encourages development but yet does not enervate by protecting basically uneconomic enterprises.

The origin of manufacturing in New Zealand is to be found in the earliest days of organised settlement and by the 1840s industry was providing the immediate requirements of the small, scattered and often isolated communities for clothes, food, building materials and home furnishings. These industries today are still substantial and thriving, and supply the greater part of our domestic requirements in these fields.

The first census of industry taken in 1867 reveals that at that time 390 manufacturing establishments employed 3,000 people. Ninety years later, this number had grown to over 8,000 establishments employing more than 156,000 persons. Long term production has increased at an annual cumulative rate of 4.6 per cent, and the last 20 years have been particularly significant with the volume of production rising by over 180 per cent, though the number of manufacturing establishments has only increased by 57 per cent. This greater output per establishment spells increased efficiency, which must remain the principal goal of those who are planning our industrial expansion and development.

It was during this period that much progress was made by industries using imported raw materials, particularly in the engineering, rubber and apparel industries. The constant pressure of balance of payments problems makes it necessary to use New Zealand raw materials to the greatest extent, but where imported raw materials are used these should be processed in this country as far back in the crude form as possible. Within the next few years it is expected that this will be carried out to an ever increasing extent.

Manufacturing industries in New Zealand face real problems — lack of mineral resources, a small national market and dispersed local markets — but they are not problems which need stultify growth. We are reaching the stage when population growth has brought the market to the point where, for the first time, many industries can be economic. This is a major advance in industrial development. In addition, we are seeing other new and encouraging advances: the establishment of a steel rolling mill in Auckland, an oil refinery, investigation into the utilisation of iron sands, the possibility of an aluminium industry.

"Manufacturing in New Zealand" will perform a most useful function in showing in compendious form the range, variety and character of industry. The well chosen photographs assist an informative text in bringing before the public a record of achievement which does credit to those who have contributed to the growth of our manufacturing industries in the past and will provide encouragement to development in the future.

W. Nash

PRIME MINISTER

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ERRATA AND ADDENDA

AJAX GKN LIMITED—Page A27, last paragraph, first line, the word "percentage" should read "parentage".

WORMALD BROTHERS INDUSTRIES (N.Z.) LTD., Page A37—Since this entry was printed paid up capital has been increased to £165,000 and preferential shareholding is now £55,000.

COLGATE-PALMOLIVE LTD., Page D10—Mr. P. E. Bowen is now Director and Sales and Advertising Manager of this Company.

THOMPSON & HILLS LTD., Page B18-19—The last two words in the heading should read "sealed in", not "pealed in."

PLASTIC & DIECASTING LTD., Page C41—The last paragraph should read: In 1957 the total shareholding of the Company was purchased, and the shareholders are now Mr. R. H. Stewart, Governing Director, and Mrs. A. G. Stewart, Director.

THE GROWTH OF MANUFACTURING IN NEW ZEALAND

A review of the statistics of factory production for a number of years shows that following the depression of the early 1930s New Zealand industries had been making steady progress up to the outbreak of the Second World War, such growth being mainly due to the establishment and growth of new industries. This diversification and expansion, which received a further impetus towards the end of 1958, greatly increased the occupational range of factory employment, and local production of raw materials ceased to be the limiting factor in the growth of factory industries — local manufacturers were able to meet the country's needs in many products which previously had been almost exclusively imported. THIS DEVELOPMENT STOOD NEW ZEALAND IN GOOD STEAD DURING THE YEARS OF THE SECOND WORLD WAR when heavy calls were made on the industrial community to supply goods no longer available from overseas, for both the armed forces and civilian requirements. Not only were there large increases in the output of items for which appropriate manufacturing facilities and skills were available, but new facilities were provided, locally and by importation, and new skills acquired for production of items not previously manufactured in this country.

The growth in production since the war has been assisted by increases in manpower engaged and capital used. There has been a considerable amount of factory building and new machinery installed — for new industries as well as for the extension of existing industries. Spectacular increases in production have come from new developments in the pulp and paper and rubber industries, but it has been the engineering factories that have contributed most to the growth of manufacturing since 1949-50. The expansion in this field has been stimulated especially by mechanisation on farms, the high level of investment in New Zealand, the demand for consumer durables, and the increased imports of motor vehicles.

Further expansion should take place in the manufacturing sector of New Zealand's economy following on the fall in export prices of its main products and the depletion of its reserves. The resultant institution of exchange controls and import selection in 1958 gave an indication that expansion could be expected from industries that can replace imports, including textiles, clothing, footwear, tobacco and engineering.

PERSONS EMPLOYED, SALARIES AND WAGES PAID, VALUE OF OUTPUT

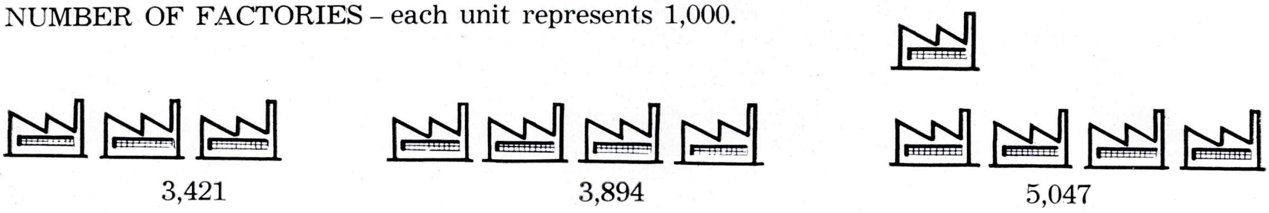
Statistics incorporated in this table show the number of persons engaged, the amount of salaries and wages paid and the value of output for the year 1957-58, classified according to industry groups. It illuminates the part which these various groups play in our national economy.

INDUSTRY GROUP	Number of Persons Engaged	Salaries & Wages Paid £(000)	Value of Output £(000)
Food	29,835	24,971	246,370
Beverages	2,322	1,882	11,149
Tobacco manufactures	1,184	736	6,730
Textiles	8,671	5,414	30,022
Footwear, wearing apparel & made-up textile goods	25,474	13,115	42,724
Wood & cork products (except furniture)	12,401	9,636	38,648
Furniture & fittings	5,112	3,675	11,823
Paper & paper products	4,858	4,077	27,054
Printing, publishing, etc.	10,102	7,886	22,895
Leather & leather products (except footwear)	1,465	990	4,110
Rubber products	2,805	2,548	10,900
Chemicals & chemical products	5,076	3,912	28,914
Petroleum & coal products	375	320	2,936
Non-metallic mineral products	6,541	5,202	20,678
Basic metal manufactures	850	724	3,299
Metal products (except machinery & transport equipment)	7,902	6,377	23,752
Machinery (except electrical)	8,963	7,208	28,179
Electrical machinery & appliances	4,081	2,848	12,556
Transport equipment	21,994	16,491	65,265
Miscellaneous products	2,974	1,980	7,104

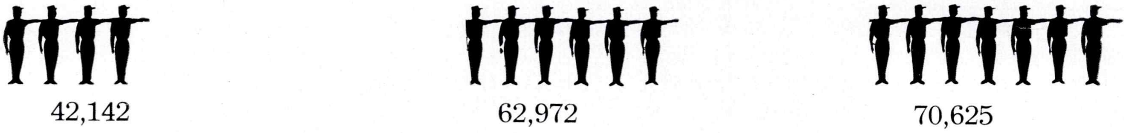
A symbolic graph illustrating the growth of factory employment and output.

1910-11 1920-21 1930-31

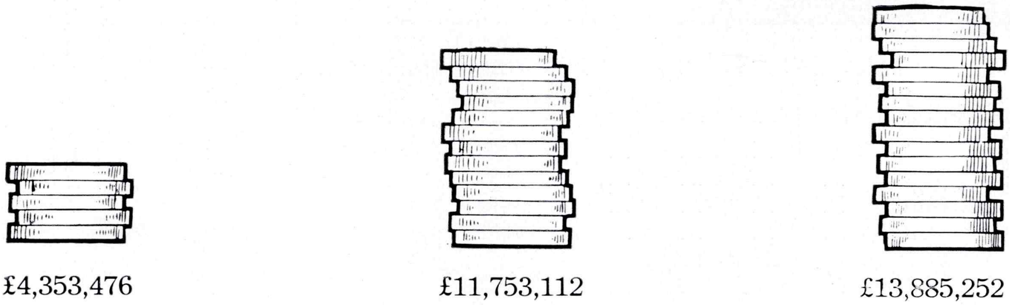
NUMBER OF FACTORIES – each unit represents 1,000.



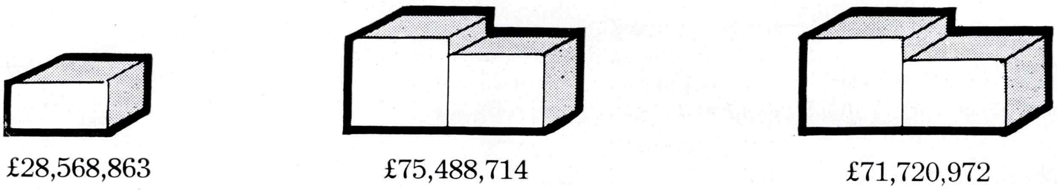
PERSONS EMPLOYED – each unit represents 10,000

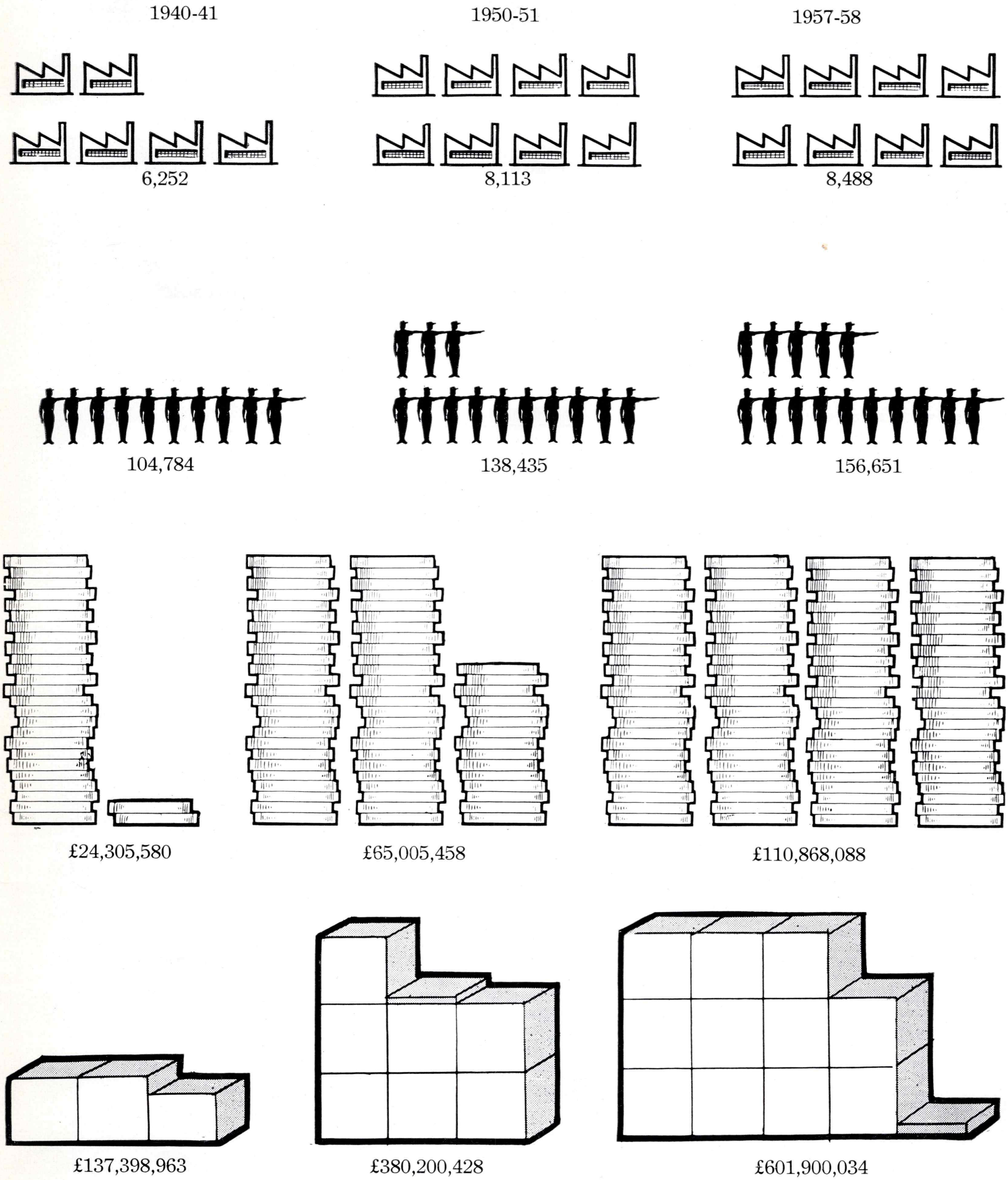


SALARIES AND WAGES PAID



VALUE OF OUTPUT



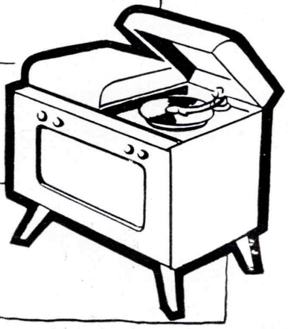

1940-41
1950-51
1957-58
6,252
8,113
8,488
104,784
138,435
156,651
£24,305,580
£65,005,458
£110,868,088
£137,398,963
£380,200,428
£601,900,034

SUMMARY OF CERTAIN COMMODITIES PRODUCED BY NEW ZEALAND MANUFACTURERS DURING THE YEAR 1957-58, THE LATEST FOR WHICH STATISTICS ARE AVAILABLE.

Toasters	28,559
Irons	8,939
Jugs & kettles	55,744
Radiators	35,129
Vacuum cleaners	34,784
Washing machines	36,896
Refrigerators	63,025
Electric ranges & rangettes	33,509
Radios	106,304
Women's fully fashioned nylon hosiery – pairs	453,332
Men's half hose – pairs	256,928
Blankets	151,872
Mattresses	182,342
Soap – tons	19,098
Paint – gallons	2,546,374
Water heaters	51,913
Sinks & sink tops (stainless steel)	47,807
Lawnmowers	64,298
Toothbrushes	1,914,624

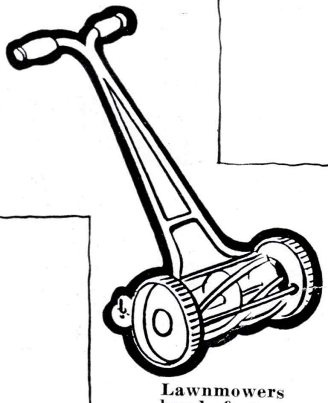
Washing Machines
36,896

Electric Ranges
33,509


Radios
106,304

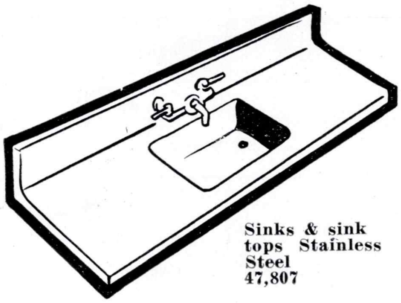
Men's halfhose
256,928
pairs

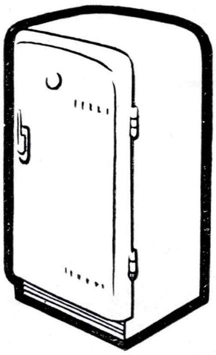
Paint
2,546,374
gallons


Lawnmowers
hand & power
64,298

Toothbrushes
1,914,624

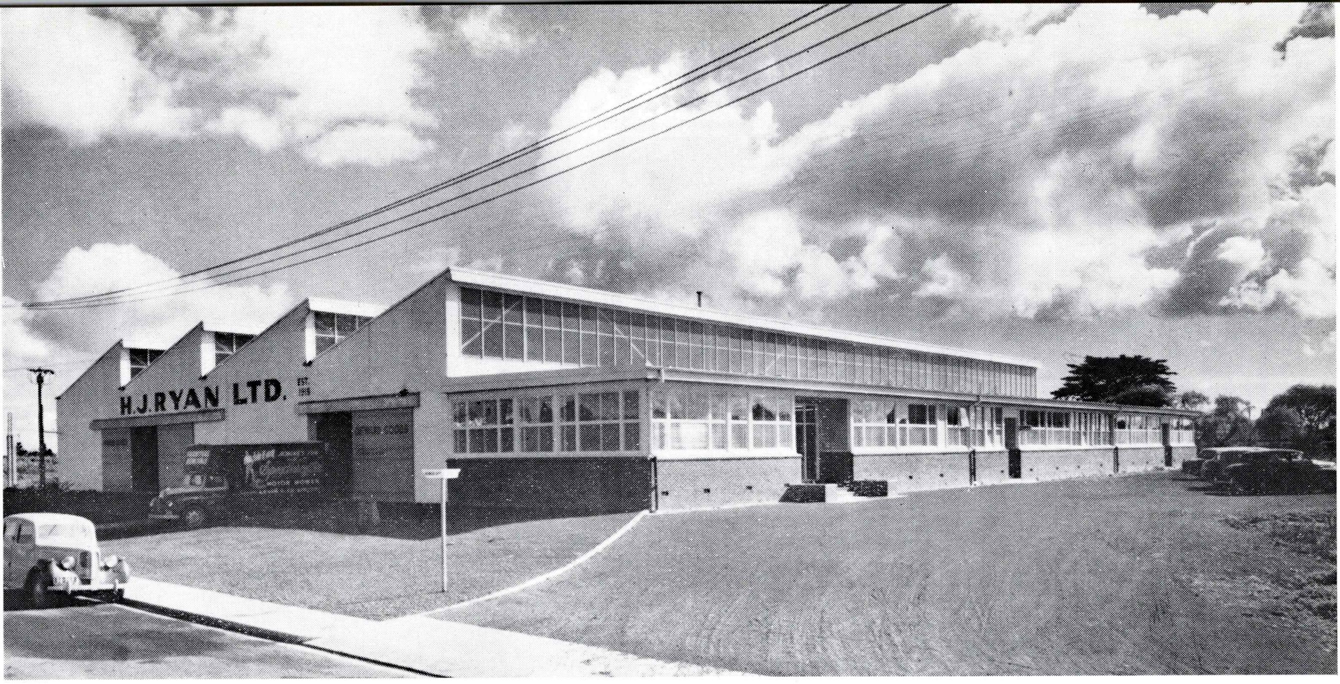
Women's fully fashioned nylon hosiery
453,332 pairs


Sinks & sink tops Stainless Steel
47,807


Refrigerators
63,025

PART A

Engineering
Metal & Electrical
Products
Home Appliances

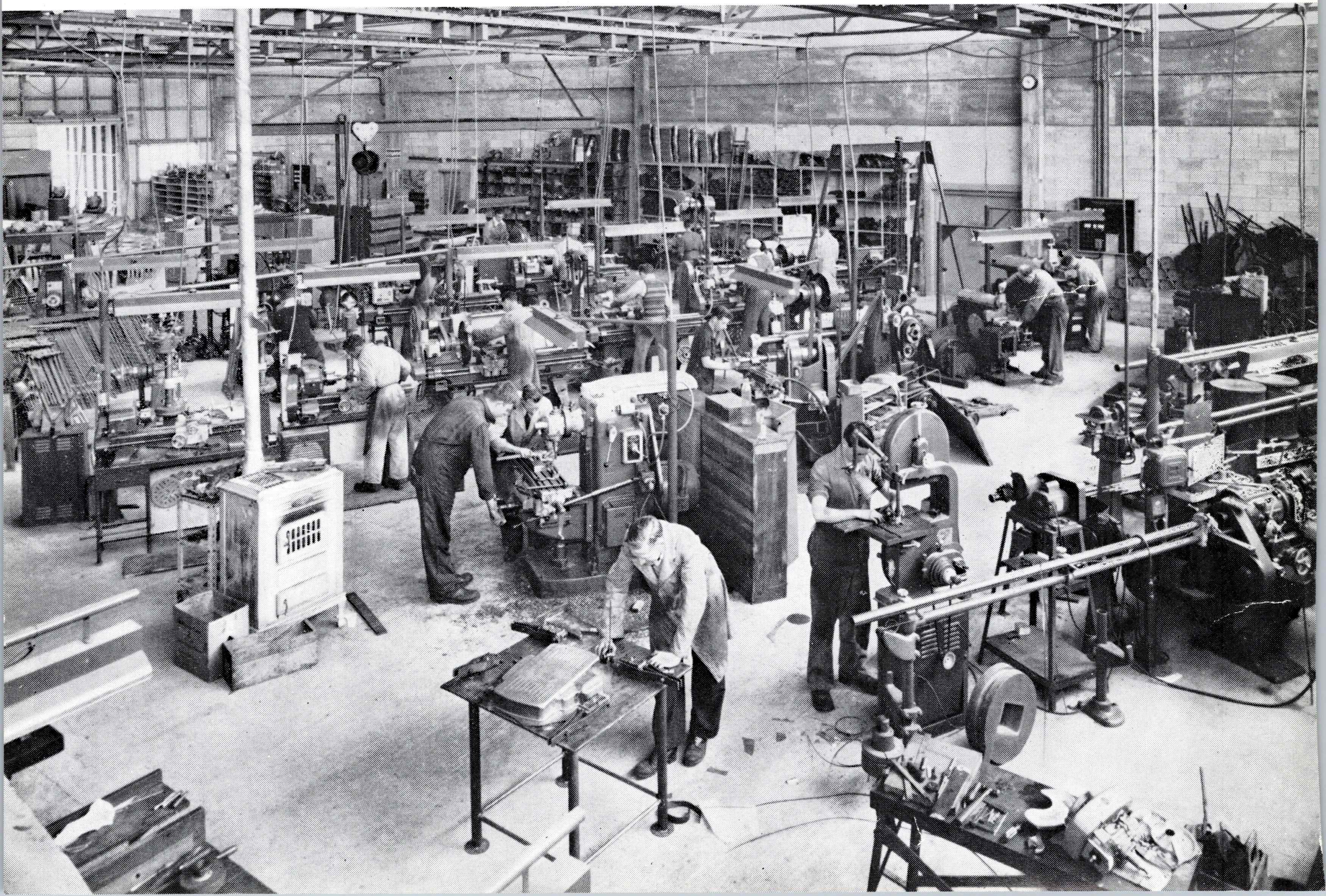


35,000 SQ. FT. OF SPACIOUS FACTORY: The premises of H. J. Ryan Ltd., in the progressive industrial district of Mt. Roskill, one of Auckland's fastest-growing suburbs.
Sparrow Industrial Pictures

H. J. RYAN LTD.

Roma Road, Mount Roskill, Auckland

RYANS KEEP PACE WITH ENGINEERING PROGRESS: A section of the spacious and orderly machine room. This engineering firm, makers of the well-known Speediescythe rotary mower, is already planning expansions to the recently-built factory.
Sparrow Industrial Pictures



The engineering firm of H. J. Ryan Ltd. was established in 1919, shortly after the end of World War I, in premises in St. Paul Street, Auckland. For the first few years, activity was confined almost exclusively to metal pressings of a small scale. In the early twenties, the nucleus of a tool room was established and this, coupled with extensions to the press shop including the installation of the first strip feed presses in New Zealand, began to overcrowd the space available. This necessitated the extension of the building and was the first step in major expansion.

With the advent of radio, Ryans entered into the mass production of parts for radio receivers. Today, they still manufacture many of the components of the modern radio by the most up-to-date methods.

By 1938, the premises at St. Paul Street were inadequate and a new factory was built at Gaunt Street to house the press shop and manufacturing section. This, together with the now modern tool room at St. Paul Street, was already in production when World War II broke out.

Immediately after the War, Ryans, anticipating the need for an efficient power lawnmower within the reach of all, designed a machine to suit local conditions. The Speediecut mower met with immediate success, and is still recognised as equal in design and value to the world's best.

In 1953, with the spread of paspalum becoming more troublesome, Ryans pioneered the small rotary mower in this country and by efficient manufacturing brought power mowing within the reach of every householder. Year by year, the Speediescythe has been improved, until today's two models are recognised as unbeatable by world standards in up-to-date design, reliability and efficiency.

Every year the volume of business and size of the products manufactured by H. J. Ryan Ltd. demanded more space and efficient handling methods. In 1954, a site was secured off May Road, Mt. Roskill, where a spacious, modern factory of 35,000 sq. ft. was erected. Here, provision was made for the larger machine tools which today's industrial progress demands. Despite all this, the need for further floor space is already apparent. However, as ample provision for expansion was allowed for during initial planning, this does not constitute a major problem.

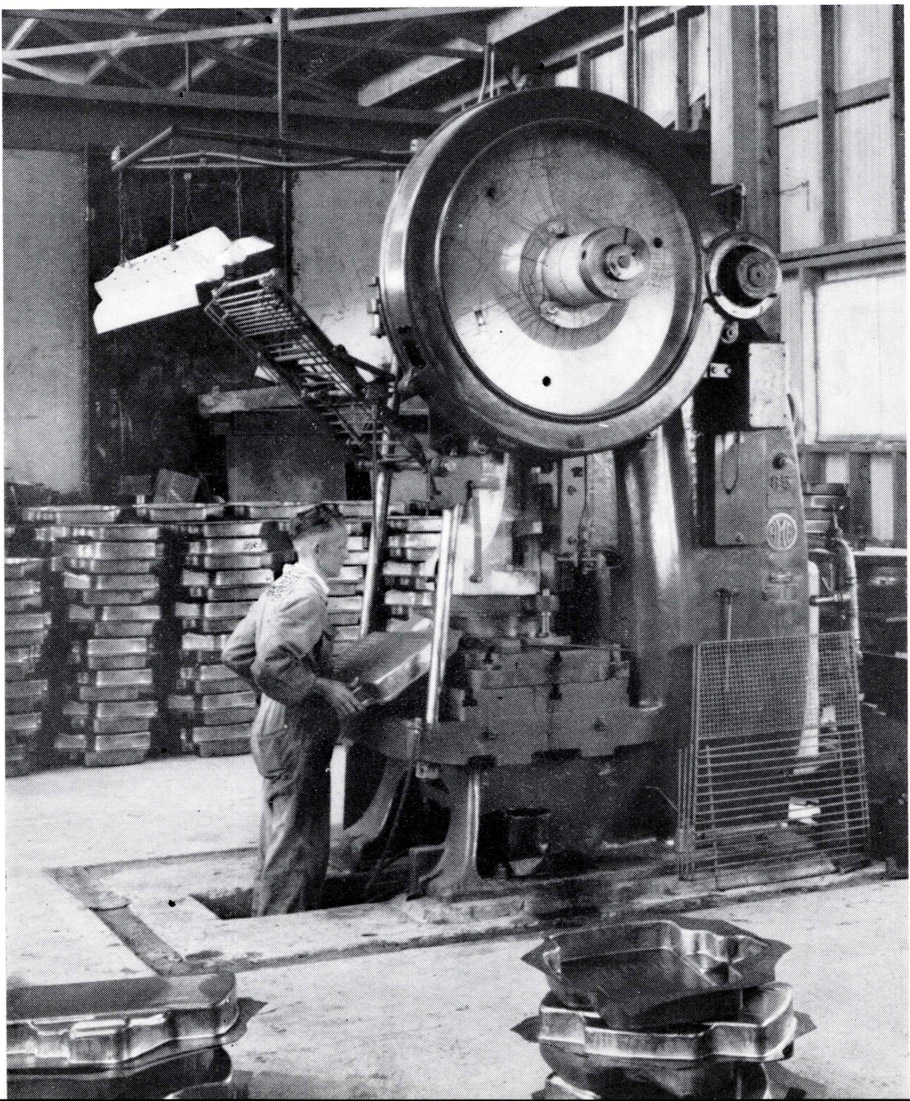
With almost 40 years of experience of toolmaking and production press work to draw on as well as general engineering experience, H. J. Ryan's services are in constant demand when difficult and unusual problems arise.

Recently, for example, it became necessary to produce in New Zealand the sides of a 15 cwt. truck, in a single stamping. This job was tackled in characteristic fashion and in a surprisingly short time sides of the type required were being manufactured. It is worthy of note that they are by far the largest stampings yet produced in New Zealand.

To those who associate noise, grease, dust and a cramped array of machinery with an engineering works, a visit to the factory of H. J. Ryan Ltd. reveals the full significance of modern planning and procedure. Visitors continue to be profoundly impressed by the spacious orderliness of this modern plant. They see the march of progress in the manufacture of many components once painstakingly made by hand, but now mass-produced and precision-finished by high-speed automatic machines, and a finer article.

Not the least hallmark of efficiency at Ryans is the fine administration block where management, accounting and drafting offices play their vital part in the company's operations.

In all this record of progress there is an historical fact on which H. J. Ryan Ltd. takes lasting pride—that is, the long continuing associations with many other companies for whom they have been producing components since their establishment almost 40 years ago.



PRESSINGS FOR A ROTARY MOWER: One of the large presses in use at Ryans turning out paris for the Speediescythe mower.
Sparrow Industrial Pictures

HANSEN ENGINEERING COMPANY LIMITED

492 Great South Road,
Greenlane, Auckland

Today, with the most up-to-date engineering equipment and automatic machines in New Zealand, Hansen Engineering Co. Ltd. is in an unrivalled position to serve the growing engineering needs of the country.

Mr. Hansen has always had two guiding principles—quality and precision, whatever the size of the job—and the "Heco" brand has assumed a real significance in the field of production engineering. Whether the order is for a small nut or screw or for a large component or assembly, the customer is guaranteed that the 5,000th part is identical with the first.

A visit to Hansen Engineering is an eye-opener. In spite of extensions, the factory is crammed with the latest machinery. Automatic lathes turn out precision parts at high speed, using metal rod of various shapes by the mile—brass, steel, aluminium, copper and synthetics.

Alongside is a 20 h.p. hydraulic copying lathe capable of astonishing production times on multi-diameter shafts. This machine reproduces with the utmost exactitude, from templates or from a previously-machined part. It also produces bevel gear blanks, both angular faces being machined simultaneously to precise limits.

A hydraulic broaching machine cuts keyways, squares, hexagons, splines and so on with almost ridiculous ease, and a big English radial drilling machine can drill up to three inches diameter in steel.

Among the varied jobs for which Hansen Engineering is particularly fitted is the making of component parts for such diverse manufactures as washing machines, radios, refrigerators, motor lawnmowers, etc. On another scale, the firm makes hydraulic presses and garage equipment.

Hansen Engineering is playing an important part in the fast-growing underwater profession and sport. The firm was the first in New Zealand to offer a specialised refilling service for aqualung bottles and has just installed the most up-to-date compressed air filling and filtering plant procurable to supply high pressure air to professional diving standards.

From the beginning, Hansen Engineering has pioneered in making skindiving equipment in New Zealand and the firm manufactures HECO aqualung sets, "demand" valves, high-pressure taps, mouthpieces, etc. It also makes underwater camera glands and many other associated accessories.

Whether the Company is making one part or a million (which it can do), the greatest emphasis is placed on accuracy. Frequent use is made by machinists of highly-sensitive comparators and gauges to ensure the utmost precision in quantity production.

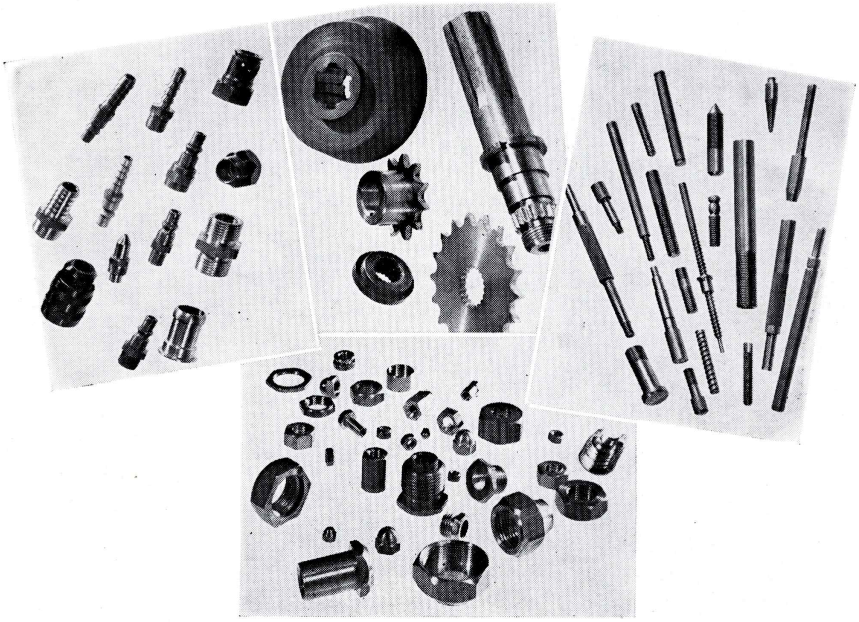
A vital factor for any manufacturer is a constant supply of component parts. Few are able to make parts as well and as cheaply themselves because of the high cost of plant and the specialised skill required. That is why a shop such as Hansen Engineering is a key factor in secondary industry. There are none in New Zealand so well equipped for the job.

This firm has the plant and know-how to provide an assembler with a constant flow of precision parts, the cost of which is cut to highly-competitive limits by high-speed quantity production. For instance, the old-style milling of gears is today practically obsolete. Hansen Engineering is well to the fore with high-class gear generating and hobbing machines. Gears and worms coming off these machines are notable for their quality and good appearance.

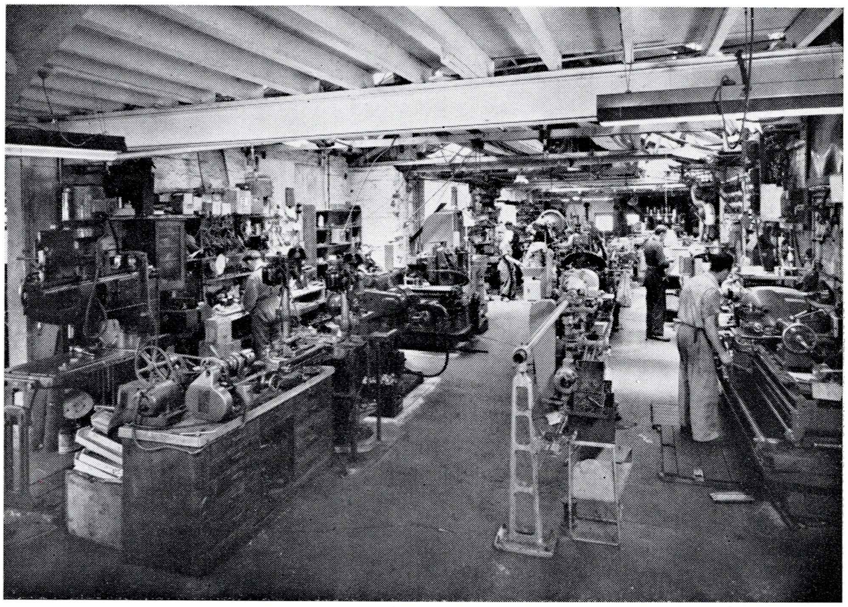
To meet the increasing demand for ultra-fine finishes and tolerances at production rates of shafts, pins, etc., the company has installed a centreless grinder with a capacity of 6 in. diameter.

In addition to quantity production, the company is in an unique position to undertake machinery and machine parts repairs and to manufacture replacements where speed is essential.

To cope with the ever-increasing tooling problem, the tool-making section has just been equipped with a Cincinnati three dimensional die milling machine. This miller is available also to undertake outside work.



A FEW OF THE DIVERSIFIED COMPONENTS produced by Hansen Engineering Co. Ltd.



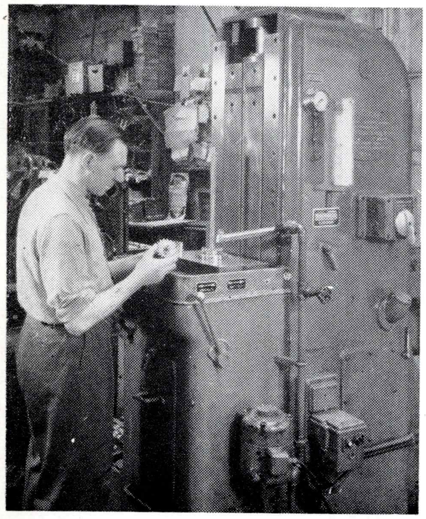
HANSEN'S PRODUCTION MILLING AND TURNING BAY. On right can be seen the latest type Dean, Smith and Grace lathe. Left centre are Herbert and Sundstrand hydraulic milling machines.

Besides serving a wide variety of manufacturing processes, Hansen Engineering produces its own make of goods under the well-known HECO trade mark. Of these, perhaps the best known are the HECO lawnmowers in six types, including rotaries, powered with either two-stroke or four-stroke motors of proved reliability.

The HECO mower sharpener and bed knife grinder are in big demand, as are HECO power hacksaw machines, electric gluepots, hydraulic presses and greasing equipment. There are also the HECO electric and steam vulcanizers and hot-patch clamps. These clamps enable motorists to do roadside tube repairs.

The firm has its own casting foundry at Penrose. Besides attending to its own extensive tool-making requirements, Hansen Engineering makes a wide variety of dies, tools, jigs and so on for customers.

Attached to the tool-making department are a fully-equipped grinding shop and heat treatment facilities, including a big induction heater for high-frequency brazing of components and the brazing of tungsten carbide tools. There are very few of this type of brazing machine in New Zealand.



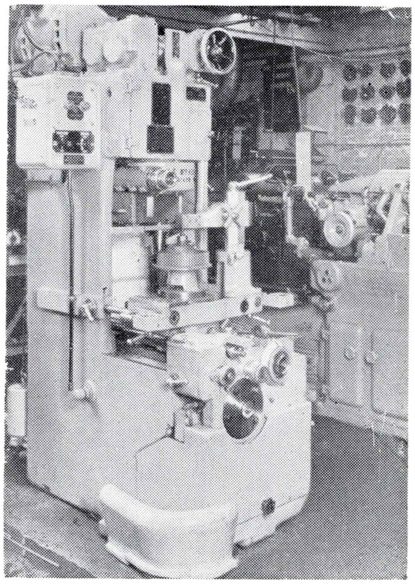
INTERNAL SPLINE BROACHING MACHINE IN OPERATION: An expensive machine, but one which makes easy work of otherwise difficult internal keyways, squares, hexagons, splines, etc. Surface and external broaching is also carried out.

An increasing number of New Zealand manufacturers have come to recognise the part Hansen Engineering can play in bettering the quality of locally-made goods by the supply of precision components.

The lesson is to be found in the amazing success of America's mass production, where such firms as Hansens are the key to more goods, better quality because of specialisation, and inevitably lower cost.

That, in short, is the service Hansen Engineering Co. Ltd. offers the New Zealand manufacturer. A machine of any kind is only as good as the parts that are built into it. Parts-making is beyond any doubt, in these highly-competitive days, a job for highly-skilled experts and up-to-date precision machinery.

Hansen Engineering offers both as the only realistic way to put New Zealand manufacturing on a high level and thus make the employment which only secondary industries can provide for our fast-increasing urban population.



GEAR SHAPING UP-TO-DATE: Old style methods have been replaced; pictured is a modern machine equipped to turn out products noted for quality and appearance.

GERRARD WIRE TYING MACHINES (N.Z.) LIMITED

Great South Road,
Penrose, Auckland

During the 40 years that have elapsed since the first tool for use in tensioning and tying a round wire strap around cases and containers was evolved and patented by the late Mr. A. J. Gerrard, an Australian who later became domiciled in the United States of America, the evolution of equipment for this purpose has progressed considerably. In this country, Gerrard Wire Tying Machines (N.Z.) Limited serves industry with Tensional Strapping Equipment and utilizes for this purpose over 30 different types of machines, comprising fully-automatic, semi-automatic, pneumatic and manually-operated equipment. No strapping job requiring either round wire or flat band strapping is too big, and none too small, to be strapped with Gerrard equipment.

The head office of the Gerrard business in New Zealand is located on the Great South Road, Penrose, and anyone entering or leaving Auckland by this route cannot fail to notice the modern factory set in nicely landscaped grounds and, above all, the appropriate sign showing the Gerrard trademark on its facade—"GERRARD—THE TIE THAT BINDS".

After being domiciled in Wellington for many years, the company, progressing with the times and in the light of the great industrial expansion in the Auckland Province, moved to Auckland some five years ago, there to establish what observers and visitors think is one of the best and most functional factories in the Penrose area. Here, working conditions and amenities provided in this well-lit, modern plant are conducive to good relationship between management and staff. The labour turnover here confirms this fact as out of a staff of 20, only one operative has left (to go abroad) in the past two years.

Wire is received at this factory from overseas steel mills, where it is drawn to a special specification set down by the Gerrard Company. After being tested for strength, ductility, etc., it is rewound into standard, trouble-free coils to fit Gerrard Patented Wire Containers. These coils are then wrapped in crepe paper and colour marked to indicate the gauge and type of usage that is appropriate.

MODERN, EFFICIENT FACTORY: Gerrard Wire Tying Machines (N.Z.) Ltd., Penrose, Auckland.

GERRARD
The Tie That Binds

COILS OF WIRE tested for strength, ductility, etc., ready for manufacture into strapping to tie the bundles that range from cake to ton lots of timber.

When one considers that products and commodities ranging from cake to ton bundles of timber are strapped with Gerrard Wire, the range of material necessary becomes obvious. In addition to the many types of Round Wire Strapping Machines carried, there is also available for the particular tensional strapping work requiring it, a full range of fully-automatic, semi-automatic and manually operated Flat Band Strapping Machines, using a range of material from 3/8 in. by .010 to 1¼ in. by .035 and capable also of catering for the largest and smallest packages, bales and rolls.

Newspapers are now installing Gerrard Fully-Automatic Wiring Machines to strap their daily output into bundles for distribution; one of these machines does the work of many manual tyers efficiently and expeditiously. There can be no hold-ups once the paper goes to press and Gerrard service and reliability is the answer.

Here, too, at the Penrose factory the Corrugated Fastener requirement for the country is manufactured from special cold rolled steel strip. This product is used in the case-making industry, and in many other fields, for jointing timber, etc., and the knowledge necessary for the successful production of this line is specialised and available to Gerrard only in this country. Gerrard Corrugated Fastener material is made in ¼ in., ⅜ in., ½ in., ⅝ in., and ¾ in. widths, slit on the premises from the large rolls of steel strip received from the steel mills. Here, again, Gerrard specification is required.

Another field also supplied with Gerrard products is the building industry, in which Gerrard Rod Ties for steel tying are used extensively, and also there are now available hand-operated pneumatic stapling tools for fixing into place efficiently, quickly and cheaply, wallboard, plywood, etc.

NATIONAL ELECTRICAL & ENGINEERING CO. LTD.

286-288 Wakefield Street,
Wellington.

Founded in Dunedin in 1906 when there were in New Zealand only a very few, small isolated electricity generating plants, the National Electrical and Engineering Company has grown with the electricity supply industry, which today makes energy available to practically 100 per cent. of the total population of the Dominion, from the national grids of the South and North Islands.

The National Electrical and Engineering Company now has a network of 10 branches and four factories, serving the needs of electric power generating and distributing authorities and industrial, commercial and domestic consumers.

While the supply of electrical plant and apparatus of types not made in New Zealand, from the factories of its several principals in the United Kingdom, Canada and United States of America, is a significant portion of its business, the company has always been engaged in some manufacturing. However, it was not until the use of domestic electrical appliances really began to become general, and thus provide a sufficient market to make local manufacture an economic proposition, that concerted moves were made to establish separate manufacturing units. In 1933, after many years' experience gained in the sale and servicing of imported electric ranges, the company established a range factory in Wellington to manufacture domestic electric ranges of design based on that of its North American principals. Thus it became the first New Zealand manufacturer to produce all-sheet-steel ranges, and, from the outset, did its own fabrication and vitreous porcelain enamelling, the furnaces being designed and built by the company itself. It also was the first local manufacturer to incorporate tubular-sheathed, radiant heat boiling plates in electric ranges.

In due course, smaller appliances, such as plug-in rangettes, table cookers, toasters, irons and fires, were added to the factory output, and electro-plating and plastic moulding divisions added to the plant facilities. As side lines, vitreous enamelled signs — traffic, street name and advertising — continue to be an interesting and important feature of factory activities, and have added to the high reputation of the company for the quality of its porcelain enamelling. A recent innovation has been the manufacture of porcelain enamelled steel building panels, following their growing popularity in North America and elsewhere, for the external cladding of buildings.

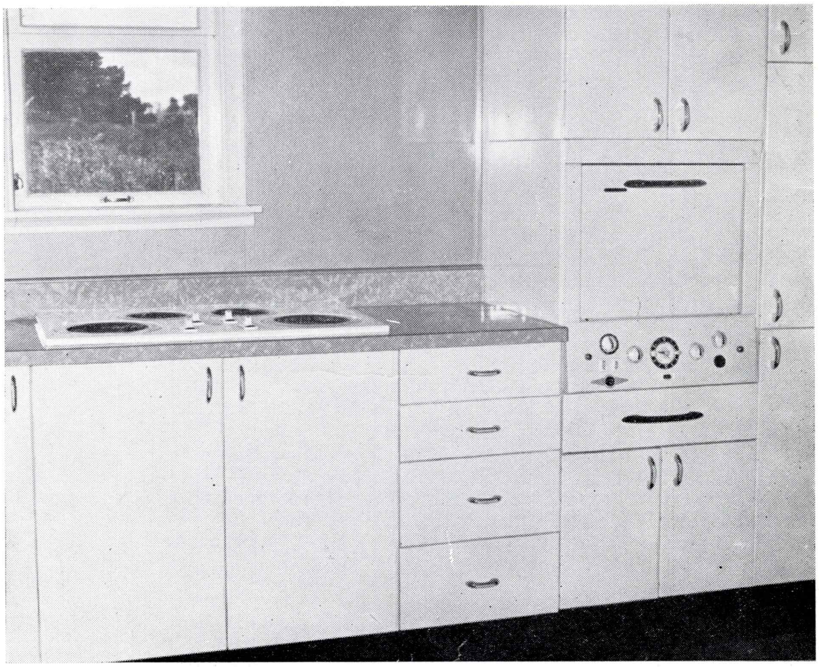
During World War II, the company was engaged in the production of commodities for the use of the Armed Services, not only of New Zealand, but also of allied countries. The press, plating, plastic moulding and enamelling facilities were all used to the utmost in producing a wide variety of components, appliances and utensils. Of particular note was the production of 36,000,000 .303 rifle cartridge charger clips and 3,000,000 porcelain-enamelled water bottles. Nearly 300 people were employed on these war-time operations.

In two small factories, the company makes fluorescent lighting fixtures for domestic, commercial and industrial applications, some types of incandescent filament lamp street lighting units, industrial type switchboards, and other lines.

An almost wholly-owned subsidiary manufacturing company is N.Z. Insulators Limited, whose vitrified porcelain clay products are marketed by the parent company.

The Head Office of "National Electric" is in Wellington.

THE CORONET RANGE, manufactured by the National Electrical and Engineering Co. Ltd.



A NEECO ELECTRICAL APPLIANCE: The Ensemble range.

THE CYCLONE FENCE AND GATE CO. LTD.

Head Office: 178 Montreal St.,
Christchurch

Branches: Corner Crimp and
Boomer Streets,
Dunedin
136 Tay Street,
Invercargill

At the turn of the century Mr. J. L. Ower, founder of the firm of The Cyclone Fence & Gate Co. Ltd., came to New Zealand as the New Zealand distributor for the Cyclone Company of Australia.

By 1903, business in this country had grown to such an extent that he purchased equipment from the Australian company and formed the present Company.

'Cyclone' Becomes a Household Word in New Zealand

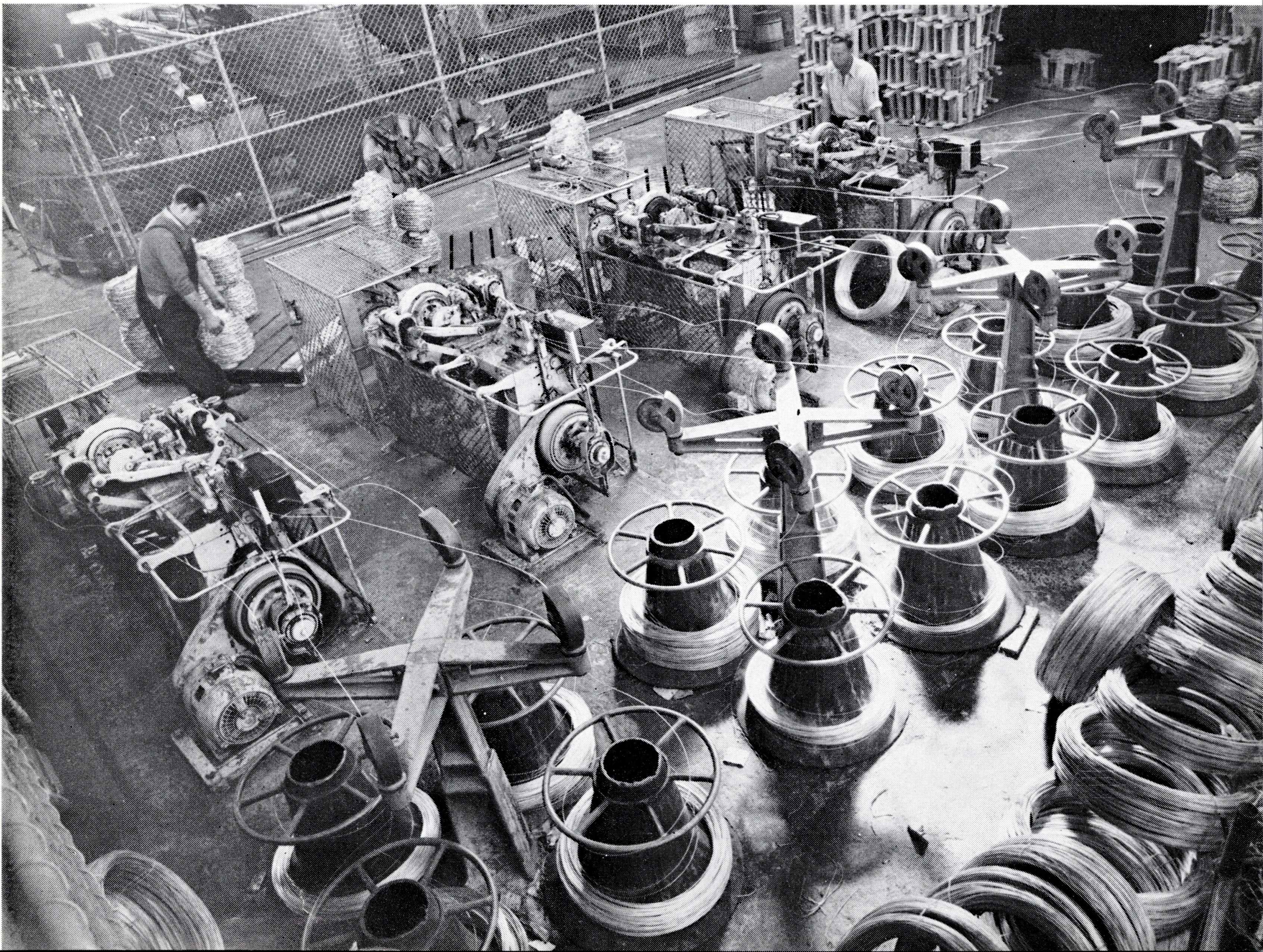
Until the early twenties, the Company produced Gates, Chain Mesh Netting and Spring Coil, followed by Triangle Mesh Sheep Netting. In 1925, Mr. L. R. Ower, son of the founder, visited Canada and purchased a Tightlock Loom for manufacturing Sheep and Pig Fencing, the product which has done more than any other to make 'Cyclone' a household word throughout New Zealand.

The Company remained a family concern until 1955, when a public company was formed in order to obtain the capital required for expansion.

Since that date, land has been purchased to cater for expected expansion requirements in Christchurch over the next 20 years, new buildings have been erected, and much new plant installed. A factory has been built in Dunedin and a branch opened in Invercargill.

MANUFACTURING BARBED WIRE: A general view of the Christchurch factory, showing four machines in use. This product is also made in Auckland, Dunedin, and Hastings.

Photo: Mannering and Donaldson.



Coping with the North Island Demand . . .

From the end of World War II until recently, the Company was so busy expanding its South Island operations that it was not able to cope with the North Island demand, and, in order to strengthen its position there, joined with Auto Machine Manufacturing Company Limited of Auckland, well-known for the manufacture of nails and automatic lathe production, to form Cyclone Auto Metal Products Limited. In recent months, a merger has been arranged with A. W. Olsen Limited, of Hastings. This progressive young company has been manufacturing tube products and chain mesh netting, and will now be developed to produce, in addition, such well-known Cyclone Products as Barbed Wire and Prefabricated Sheep and Pig Netting.

Thus, in a few years, Cyclone, by the vigorous use of fresh capital, has strengthened its structure and extended its operations to enable it to manufacture efficiently and offer prompt service throughout New Zealand.

For Production of Fencing—the Ideal Machine

The firm, since its formation, has been concerned with the production of Prefabricated Sheep and Pig Fencing. In the very early years it operated the Cyclone Fence Machine patented by the Cyclone Company of America, which wove the netting on the site, but was slow in comparison with today's looms.

This was followed in turn by the Spring Coil, the Triangle Mesh and the Interlock Loom, as the company pursued its policy of buying the most up-to-date and efficient equipment. These machines were finally relegated to a secondary role by the Tightlock Looms, which produce a fencing which has no equal.

Last year, the latest Hinge Joint Machine was purchased and the Company introduced 9-inch Twinlock to the market—the first 9-inch mesh to be offered in Australasia.

Groyne Netting for River Control

Chain Mesh Netting has been produced since the very early years, and has always been extensively used as groyne netting for river control work.

One early contract was the production of groyne netting for river control works carried out along the Waimakariri and Bealey Rivers, when the East-West railway line was laid through Arthur Pass. Then it was made on hand machines, but today the latest automatic equipment is used.

Hundreds of Tons of Barbed Wire

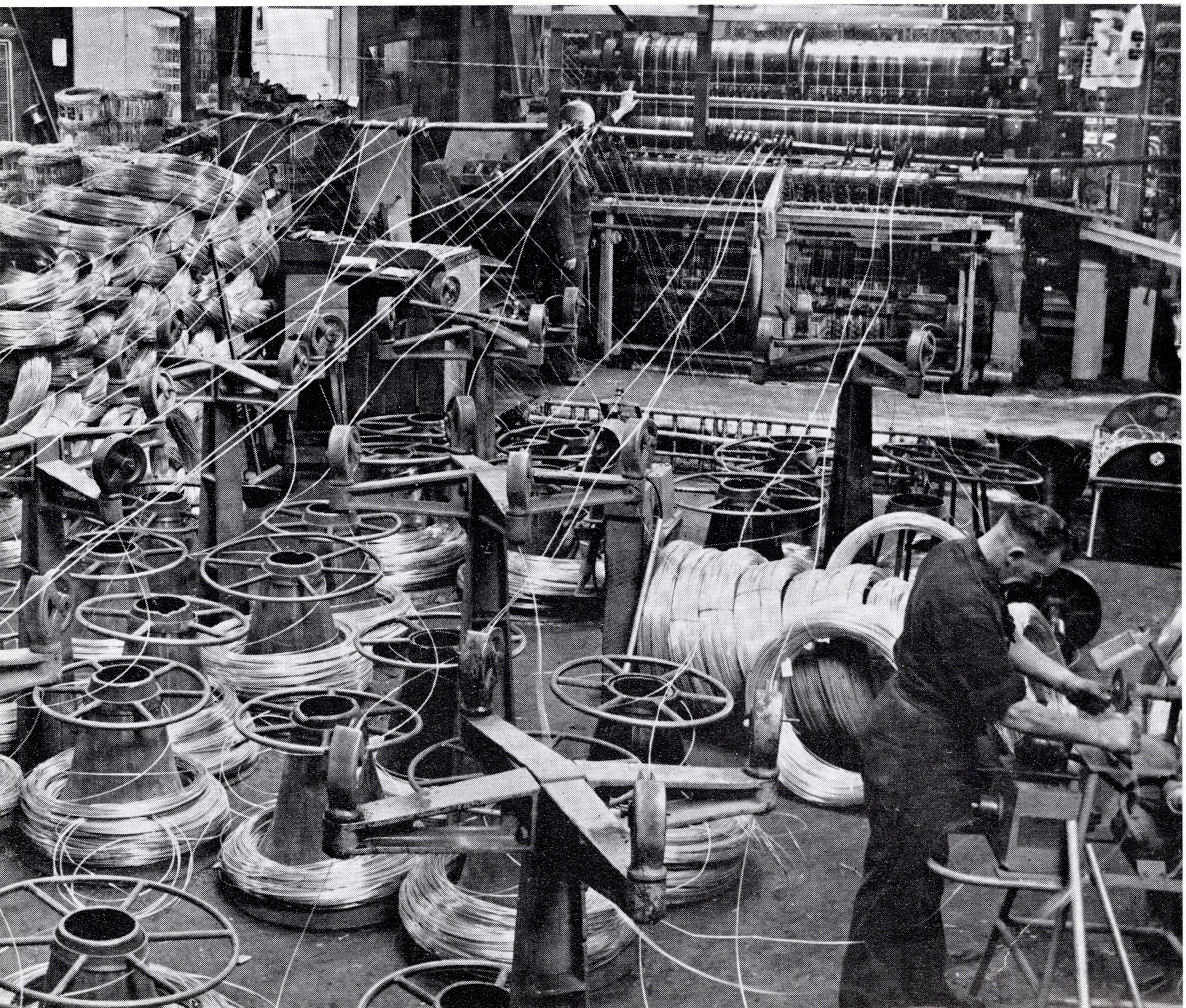
Barbed Wire is another product which uses hundreds of tons of galvanised wire each year. This has been manufactured in Christchurch and Auckland for many years, additional plant has been installed in Dunedin recently, and now its manufacture has been commenced in Hastings, thus giving the Company the widest coverage of any manufacturer, and eliminating costly freight charges.

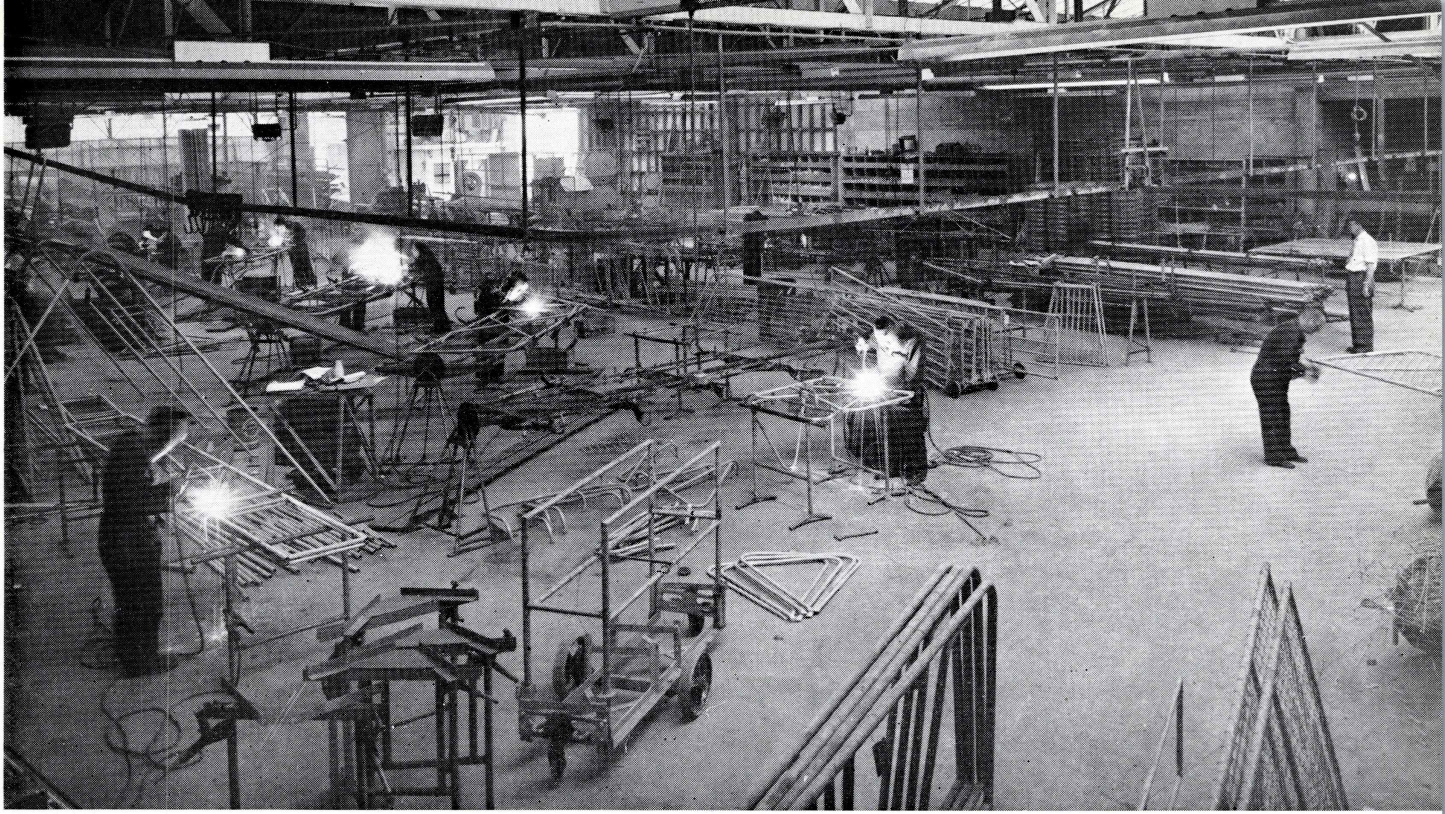
Eighteen months ago, plant was installed in Dunedin for manufacturing welded Reinforcing Fabric. This plant also makes mesh of various types for use in the range of products manufactured by the Company.

Galvanised Fencing Staples, the demand for which is diminishing as the use of concrete posts and steel posts and droppers increases, have been produced in Christchurch and Auckland since the twenties.

SINCE ITS FORMATION, CYCLONE HAS BEEN CONCERNED WITH THE PRODUCTION OF WIRE NETTING. Here is pictured the expensive machine, recently installed for the manufacture of this important line.

Photo: Mannering and Donaldson.





A SECTION OF THE TUBE AND STEEL SHOP: Although gates are the main product in this material, others are being introduced each year.
Photo: Mannering and Donaldson.

A Challenge to Wooden Gates—The Tubular Product

In earlier years, Tubular Gates were considered a luxury, but today, as a result of mass production methods, and the higher price and lower quality of timber available, and because of the efficiency of easily-worked gates, they are challenging the erstwhile supremacy of the wooden product. Every year sees detail improvements and new design features.

The Company manufactures all its own fittings and these are all galvanised after manufacture. It is Cyclone's policy to add to its range of tubular products each year, and the following are some of the most popular:—

Galvanised Tubular Sheep and Cattle Crates, which have proved lighter and stronger than wooden crates, and less damaging to stock.

The Company produces Wool Shed Equipment, such as Mobile Fleece Bins, Wool Barrows, and Wool Tables. It is interesting to note that the British Wool Board recently asked for a sample Wool Barrow to be shipped to the United Kingdom.

Galvanised Tubular Sheep Yards have proved very popular, due to their lasting qualities and the ease with which sheep may be handled in them.

Tubular Hay Feeders, which can be towed by a tractor, are produced, as well as many other tubular products for use on farms. In many cases, these products are manufactured in easily-assembled sections, so keeping freight charges to a minimum.

Prefabricated Farm Buildings

Last year, the Company commenced the production of Steel Section Buildings, and later introduced prefabricated Hay Barns and Implement Sheds of tubular construction. This year, Wool Sheds, complete with Tubular Gates and Pens—on the shearing floor, and under the shed—have been added to the range, and Tubular Prefabricated Garages are being developed. All these buildings will shortly be offered in galvanised material, which will provide farmers with buildings of almost unlimited life.

If it's in Tube or Wire, Cyclone can Supply

The Company is well-known for a number of specialist lines, such as Crimped Mesh Screens for screening shingle, coal, and sand. Spot welded Wire Goods, such as Oven and Refrigerator Trays and Display Stands, Fencing Droppers, Crimped, Spiral, and the famous Quickfix Steel Battens, are made in large quantities. The last-named are made on a machine designed and manufactured by the Company's engineers. Upholstery Springs, Ideal Fencing Posts, Battery Poultry Cages, Formed Wire Shapes, Playground Equipment and Conveyor Belting are included in the range of products, and in fact, it may truly be said that if it is made of Tube or Wire, Cyclone can supply.

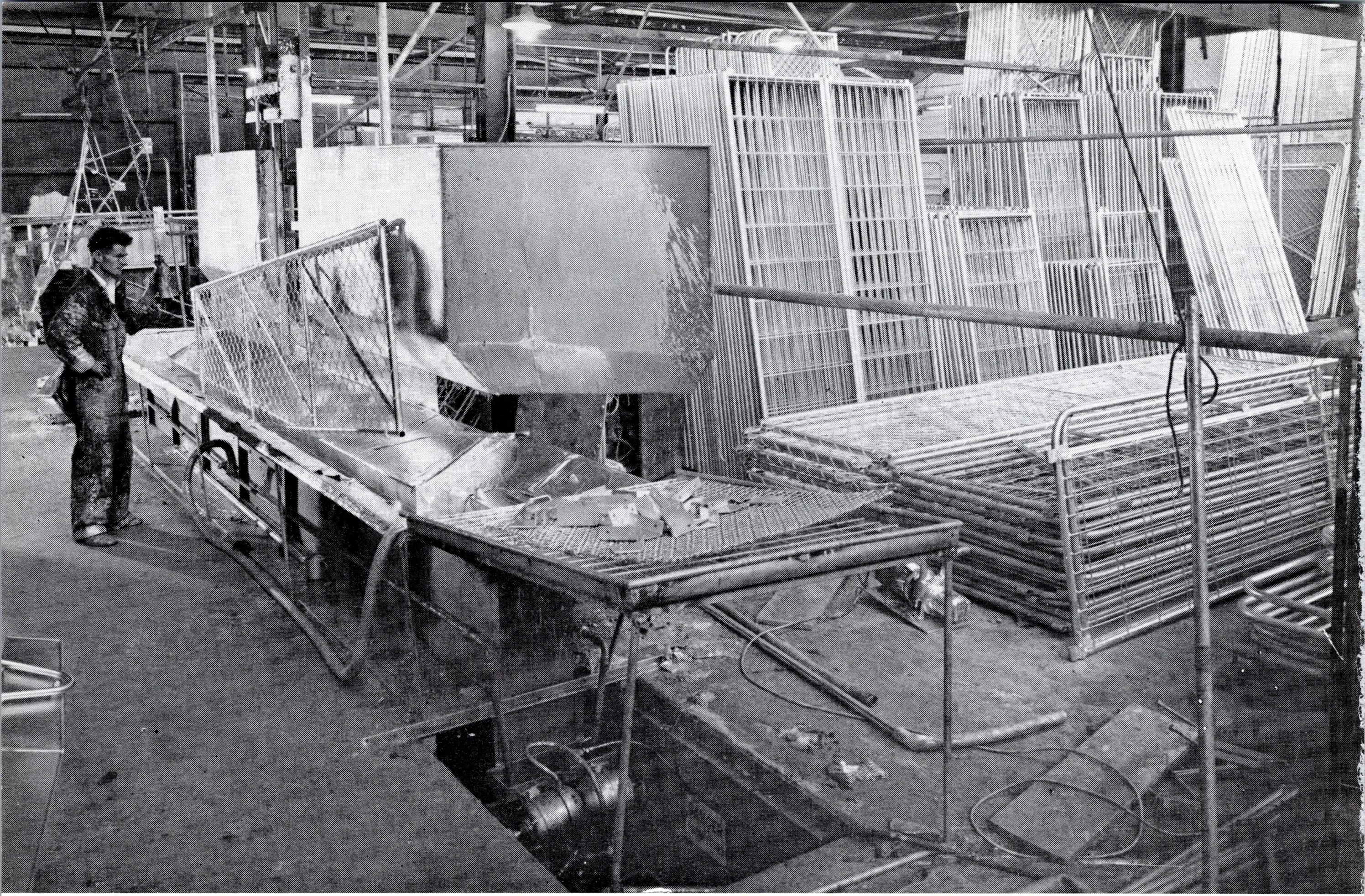
The name "CYCLONE" is a household word, partly because of advertising, but also because of its 55 years of manufacturing of quality products.

Cyclone goods are widely advertised to keep the name synonymous with Wire and Tubular Farm products, and also to keep consumers advised of new products and competitive prices.

Meeting the Farmer and Knowing his Needs

Probably the Company's most effective display is its stand at the Canterbury and Invercargill A. & P. Shows each year. This provides an opportunity for the staff to meet its buying public—the New Zealand farmer—and to discuss the good and bad points in the design and quality of Cyclone products. This is a valuable contact, as the farmer knows what he needs and the Company's aim is to give it to him at a competitive price.

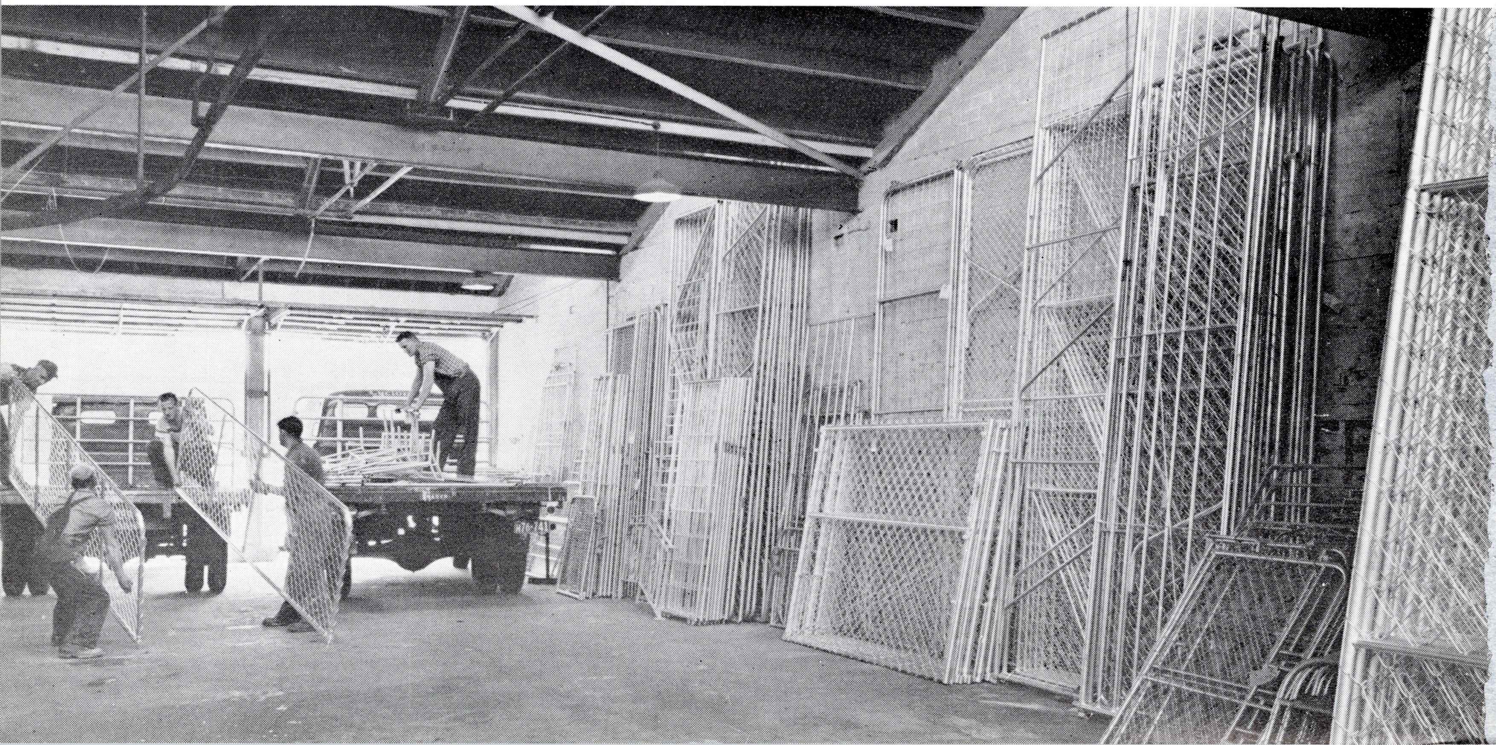
Cyclone's policy is to manufacture any product which farmers use and to manufacture any product which is made of wire or tube. It believes in selling the highest possible quality at the lowest possible price and all its products carry an unconditional guarantee against faulty workmanship.



IN THE AUTOMATIC VERTICAL DIP, they receive a coating of bright aluminium paint, which adds to their lasting qualities.

TUBULAR PRODUCTS AT THE END OF THE ASSEMBLY LINE

PRODUCTS READY FOR DELIVERY FROM THE OUTWARD GOODS STORE.
Photos: Mannering and Donaldson.



"CHAMPION" ELECTRIC RANGES on the assembly line at the Company's works, Dunedin. (Below): THE TESTING BAY.

RADIATION NEW ZEALAND LIMITED

Brinsley Works, Jutland St., Dunedin

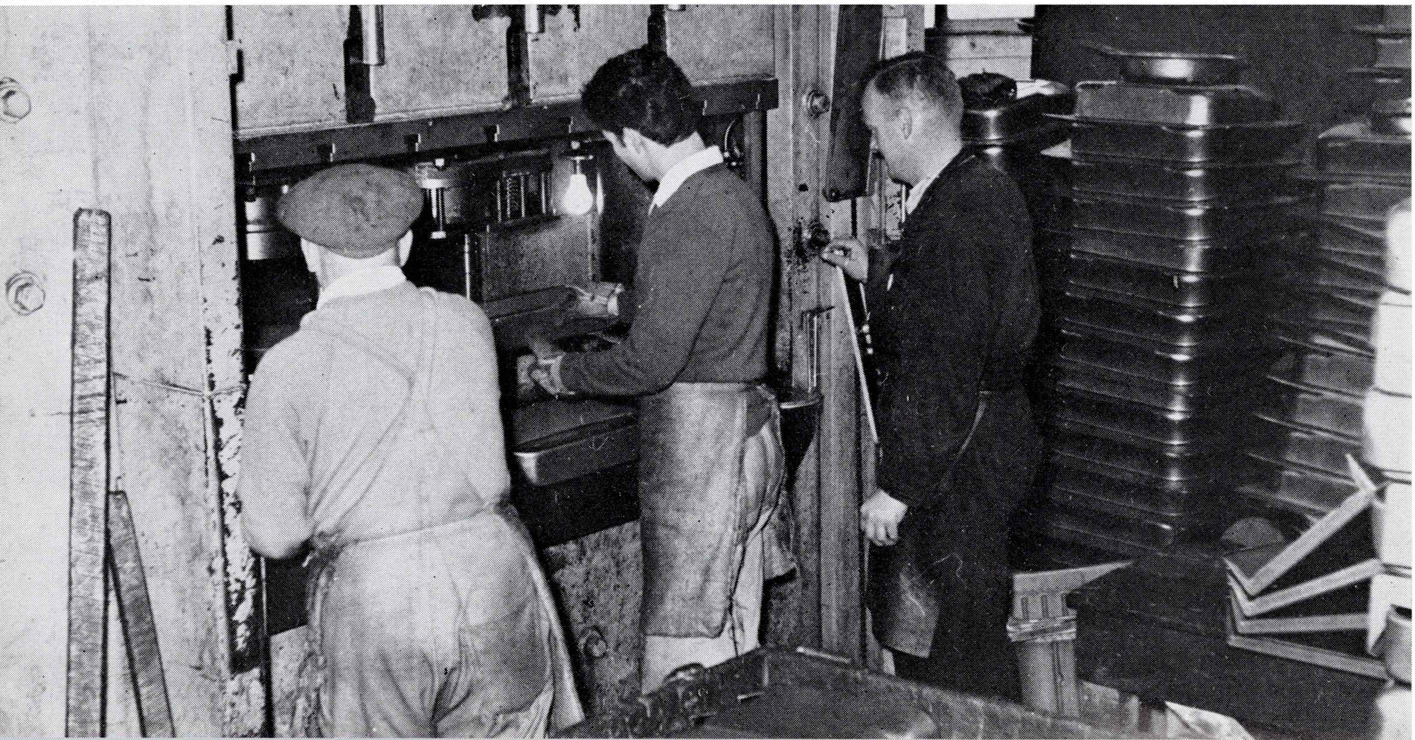
RADIATION NEW

Richard Brinsley, grandfather of the present Managing Director of Radiation New Zealand Limited, Dunedin, was the founder of this company in 1896. A patternmaker, he formed his company, known as Brinsley and Co., to produce Coal Ranges, Grates, Cast Iron Verandah railings and Theatre Chair castings; he made all the wooden patterns then used for this type of work. Not long afterwards, in 1906, his son, William Richard Brinsley, joined the firm, and, in 1916, developed the first of the Company's gas stoves, a small griller. Then came the job of selling it, and he set off to call on all the gas undertakings through New Zealand. The little gas stove was an outstanding success. He had not travelled very far before he was recalled to Dunedin—the small foundry could not keep up with the sales, and all hands had to concentrate on producing and despatching the orders on hand.

The First Full-Size Domestic Gas Cooker

In 1919, the first full-size domestic gas cooker was produced, and from that stage onwards the Company's name stood high in the gas cooker business. Success was assured and, in 1924, a new factory on a reclaimed area of the foreshore in Dunedin was built. The original founder, Richard Brinsley, who was then very ill, was taken down to see the new plant in operation, just before he passed away.

(Left): DRILLING OF COOKER AND RANGE components in Machine Shop. (Below): FORMING SHEET STEEL PARTS in Wilkins and Mitchell 200-ton press.



ZEALAND LIMITED

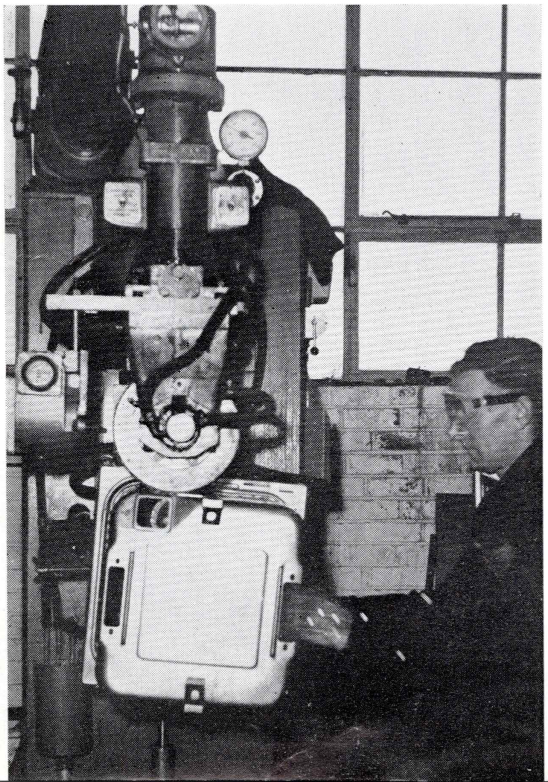
On his father's death, William Richard Brinsley became Managing Director, and he was the man responsible for the erection of the first vitreous enamelling plant in Dunedin. An expert was brought out from England to instruct the staff on how to carry out this work, and he was with the Company for a year.

Amalgamation with Radiation, England

In 1930, an approach was made by Radiation Ltd. of England, the largest manufacturers of gas appliances in the British Commonwealth, for an amalgamation. When this was carried out in 1931, the Company's name was changed to Radiation New Zealand Limited, Brinsley Works, and the English New World Gas Cooker was then manufactured at the Dunedin factory. This amalgamation gave the New Zealand Company the benefit of the research and development carried out in the Radiation laboratories in Birmingham, and this information has been available ever since.

Electric Stoves were first made in the works in 1940, but it was not until 1950 that full scale production of the "Champion" Electric Stoves was under way.

(Right, from top to bottom):
SUB-ASSEMBLY OF OVEN ELEMENTS.
FIRST PART OF ASSEMBLY TRACK, showing partially completed cookers.
INSPECTION OF ELECTRIC RANGE HOB in the Enamelling Department.
(Below): OPERATOR WELDING OVEN COMPONENTS on seam welder.



"Champion" products today comprise: Electric Ranges, Gas Ranges, Coal Ranges, Solid Fuel Water Heaters and Room Heaters, and Dover Stoves, etc. The Company also manufactures "New World" Gas Stoves.

Gas Cooking for Hospitals, Hotels

Large gas cooking equipment is made at the Dunedin factory and many hospitals and hotels throughout New Zealand are equipped with heavy duty "Champion" Gas Ranges.

In 1947, Mr. William Richard Brinsley was made Chairman of the Company, a position he held until his retirement in 1954. His son, Winston Richard Brinsley, was appointed Managing Director in 1955.

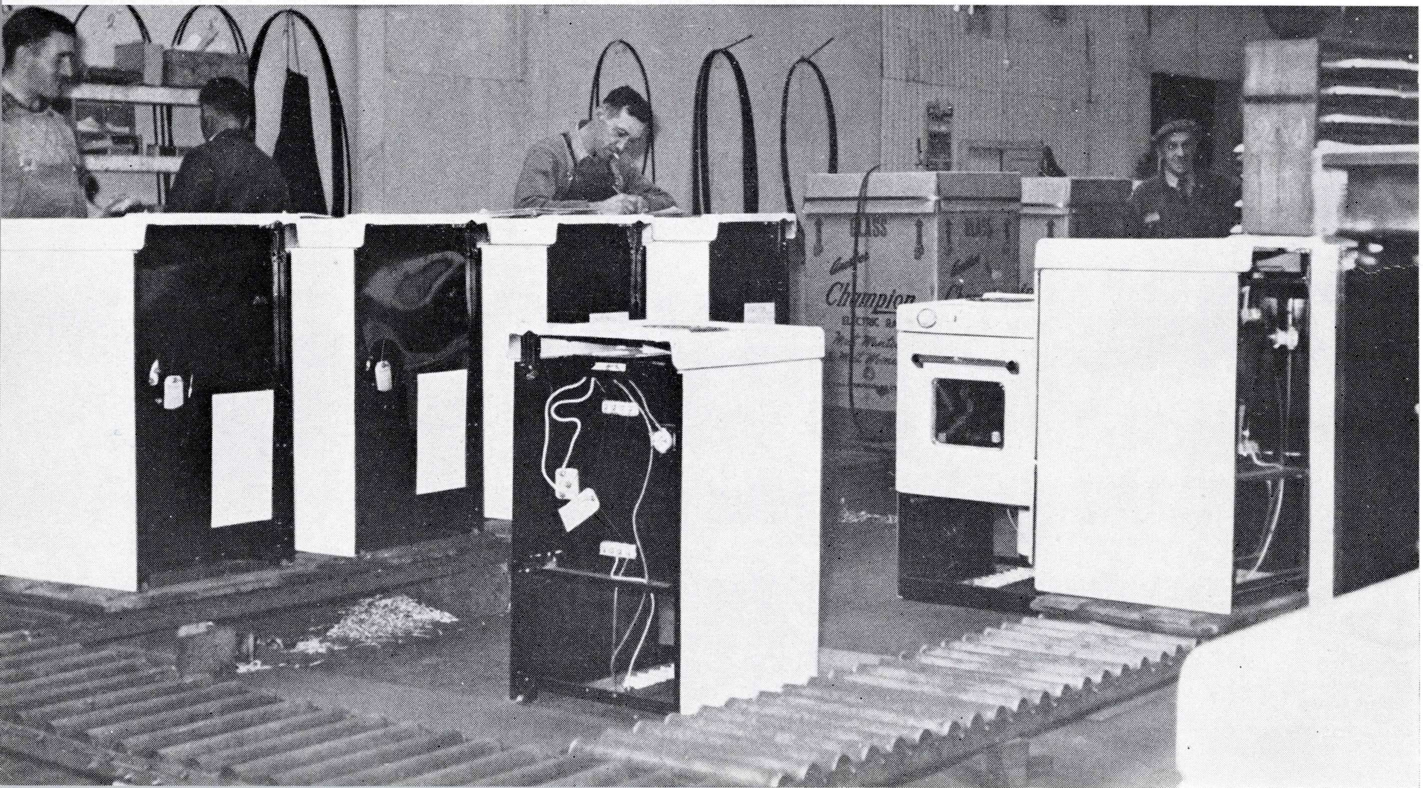
Board of Directors

The present Board of the Company comprises Mr. Charles Penman (Chairman), Mr. Winston R. Brinsley (Managing Director), Mr. J. H. Gilkison (Secretary), and Mr. W. Donald King of London.

The Company employs a staff of 220 at the Brinsley Works. Raw materials are imported from England, Denmark, U.S.A., and Australia.

FINAL STAGE OF ASSEMBLY TRACK before cooker is tested.

(Below): THE DESPATCH BAY for the finished product: "Champion" Electric Ranges roll off the Assembly line.



The Demand For Records Grows Bigger and Bigger

HIS MASTER'S VOICE (N.Z.) LTD

162-172 Wakefield Street, Wellington

The history of the progress of His Master's Voice (N.Z.) Ltd. really dates from 1910, when the old-established Wellington firm of E. J. Hyams & Co. Ltd. was granted the New Zealand agency for H.M.V. products, just a short time before Mr. Alfred Wyness joined the firm as secretary, one of his special charges being the control of the gramophone records section.*

At this time, the main Australasian agency for H.M.V. was in Sydney, but the development of the New Zealand trade made it possible by 1918 for New Zealand to be granted direct representation.

In that year, a direct subsidiary of the Company was established to handle H.M.V. products. This organisation operated under the name of "Gramophonium", and continued as such until 1926, when His Master's Voice (N.Z.) Ltd. was registered as a separate company, with its own directors and capital.

The Company's First Directors

The first directors of the new company were: Messrs. E. J. Hyams, managing director; Alfred Wyness; and W. Manson (representing The Gramophone Company), who had earlier come from England to establish a factory in Sydney. The Gramophone Company, London, was directly interested in His Master's Voice (N.Z.) Ltd., being large shareholders. Mr. Manson was their direct representative on the board in New Zealand. When Mr. Hyams withdrew in 1930, Mr. Wyness became Managing-Director on instructions from the parent company in England. Mr. E. J. Isaac, who joined Gramophonium in 1918, was appointed secretary of the new company.

Radio — and How it Affected the Market

Soon after he took control of the organisation, Mr. Wyness found two conflicting and important factors in the radio and gramophone business: first the fantastic growth of radio as a new entertainment medium, and, secondly, a falling away in record sales as radio stations were established and more people bought radio sets. The Company immediately established a radio department and radios were imported in constantly increasing numbers from Britain and America.

At the same time, new agencies were established with overseas record concerns and, before long, the Company was handling not only "H.M.V." and Zonophone discs, but those from Columbia and Regal as well. Later came the amalgamation of Regal and Zonophone into what is now the well-known Regal-Zonophone label. Later still came the taking over of the distribution of Parlophone records, giving the Company the bulk of the record distributing business in the Dominion, and bringing virtually all of the world's best-known artists to the New Zealand public. The field was further extended when the distribution rights for Decca, Metro-Goldwyn-Mayer (M.G.M.) and London labels were obtained.

Home Appliance Field Brings Expansion

Meanwhile, during the 1930s another side of the business was developing: the distribution of refrigerators, washing machines, domestic irons, heaters, toasters and other household appliances. This brought even greater expansion to the Company's already considerable business.

MR. J. F. LOCKWOOD, Chairman of Directors of the E.M.I. Group.

MR. A. J. WYNESS, Managing-Director of His Master's Voice (N.Z.) Ltd.

Until 1938, the Company was largely an importing organisation, but in that year import restrictions caused the stoppage of many items, and a severe check in the importing of others. Thus a further forward move was made with the establishment of a manufacturing plant.

Transmitters for the Armed Services

Troubles, as we know, never come singly, and just as the factory was beginning to operate smoothly, World War II broke out. Instead of radio receivers for use in the home, the Company began to manufacture radio transmitters for the Armed Forces, and other war equipment made under strict Government supervision. Incidentally, during the production of one type of military radio units, the H.M.V. factory established a production record in New Zealand for radios.

*When Mr. E. J. Hyams took over the New Zealand agency, gramophone records were one department of E. J. Hyams & Co. Ltd. The gramophones were spring-driven with one large horn; these were later replaced by models with internal horns.

At the end of the War the factory reverted to the production of commercial receivers and made up the leeway lost during war-time. Simultaneously, the demand for radios in the Auckland district kept on increasing and it was decided to establish a branch in Auckland. Mr. E. J. Isaac was appointed manager late in July, 1946. Mr. Isaac was without staff for some months, but received valuable assistance from Mr. John Dunnet, who visited Auckland periodically whenever large consignments of records arrived from overseas. Today, a staff of 15 takes care of the record side of the business, as well as fitting and servicing radiomobiles, refrigerators, washing machines, etc.

The demand for discs also "mushroomed" as music-lovers sought new records almost in vain. Licence-control of imported goods stopped them from getting the discs they wanted, and to overcome this problem a factory was established in Kilbirnie, Wellington, in March, 1949, where discs were pressed from imported matrices.

For several years prior to the middle of the century, space was a constant problem to the Company, and in 1950 it welcomed the opportunity of buying a block of land with buildings in Wakefield Street, Wellington. Large-scale improvements were made, and head office and various departments moved to the more spacious quarters there.

Tribute to a Pioneer

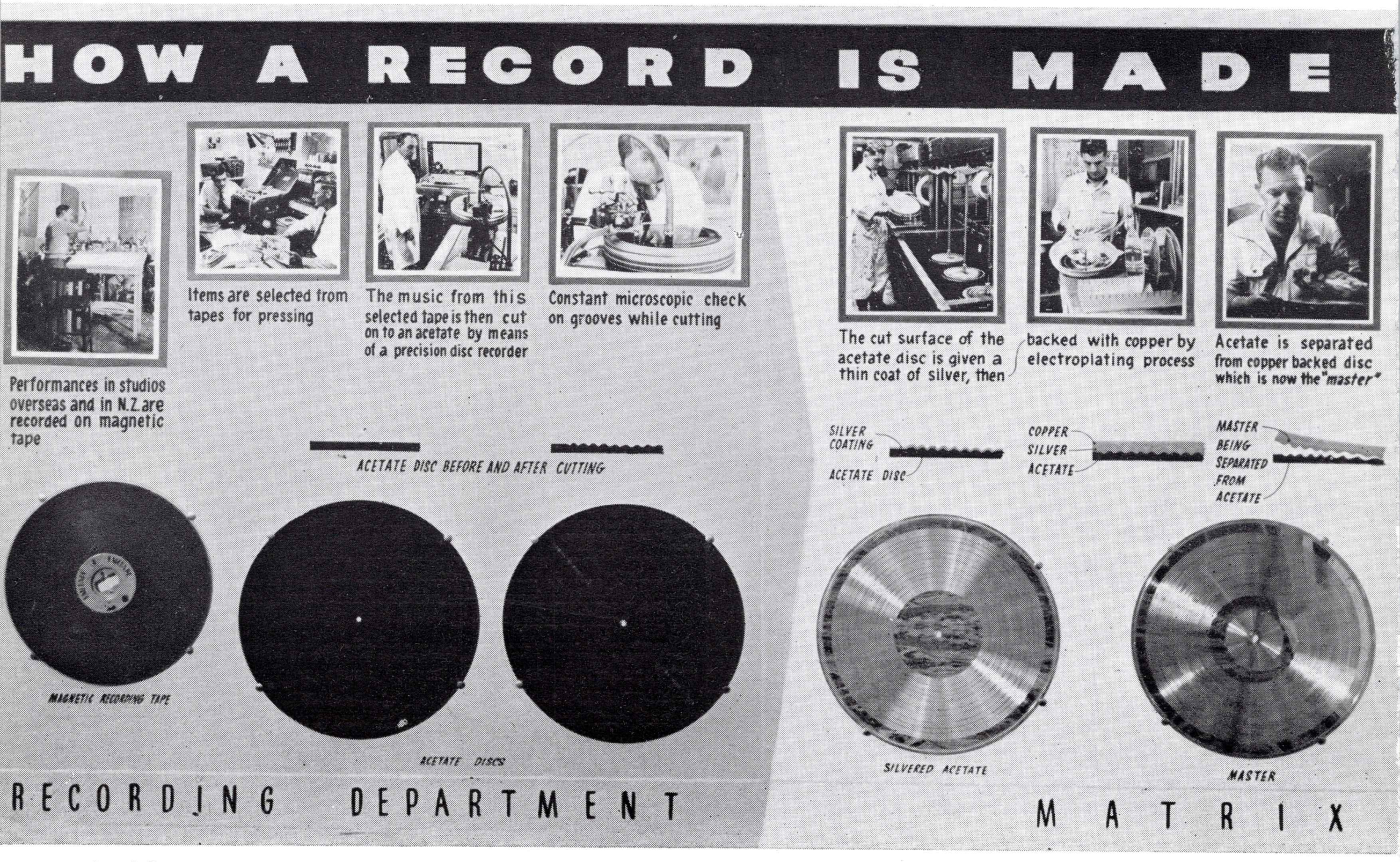
Mr. Alfred Wyness, originally from Fraserburgh, Scotland, whose zeal and years of solid work have been responsible for the splendid progress made by H.M.V. in the country of his adoption, had the supreme satisfaction of leaving the Company in a secure position from every viewpoint, when he finally retired in December, 1951. H.M.V. is now an integral part of New Zealand business, playing an important role in the commercial entertainment, educational and cultural life of the people.

Mr. Wyness was farewelled by a large and representative gathering of friends and business associates at the Royal Oak Hotel, Wellington, on December 5, 1951, when many speeches by representatives of the gramophone and radio industries reflected the high esteem in which he was held throughout the industry. Mr. E. J. Hyams spoke of his early association with Mr. Wyness when they were interested in marketed gramophones and recordings some 40 years previously. He cited the cordial and unbroken friendship that had existed between them ever since, and praised the sound business ability of Mr. Wyness, who had from a small indent business established one of the largest manufacturing industries of its kind in New Zealand. Mr. Murray Wiseman, Auckland, on behalf of H.M.V. dealers throughout the Dominion, presented Mr. Wyness with a handsome writing bureau, and Mrs. Wyness with a tea-trolley and some fine china. Mr. Ron Bull, a director of the Company, on behalf of the senior executives and staff, presented Mr. Wyness with a bedroom clock, and read many tributes, including those from the parent company, Sir Ernest Fisk, Mr. J. M. Burnett, and Mr. R. Slade (president Wellington Radio Manufacturers' Association). Mr. Wyness, obviously overwhelmed by the tributes paid to him, fittingly and feelingly replied, expressing his affection for H.M.V. and its association with the famous dog.

The Master of Ceremonies at this farewell gathering was Mr. E. J. Isaac (Auckland), a director of the Company. Mr. Wyness continued his association with the Company in the role of chairman of directors for some years until failing health brought about his retirement in March, 1953.

Mr. A. J. Wyness succeeds his Father

Mr. Alfred Wyness was succeeded by his son, Mr. A. J. (Jack) Wyness, the present managing-director and chairman, who joined the Company in 1931, and has grown up with the


HOW A RECORD IS MADE
Performances in studios overseas and in N.Z. are recorded on magnetic tape
Items are selected from tapes for pressing
The music from this selected tape is then cut on to an acetate by means of a precision disc recorder
Constant microscopic check on grooves while cutting
The cut surface of the acetate disc is given a thin coat of silver, then
backed with copper by electroplating process
Acetate is separated from copper backed disc which is now the "master"
ACETATE DISC BEFORE AND AFTER CUTTING
SILVER COATING
ACETATE DISC
COPPER
SILVER
ACETATE
MASTER BEING SEPARATED FROM ACETATE
MAGNETIC RECORDING TAPE
ACETATE DISCS
SILVERED ACETATE
MASTER
RECORDING DEPARTMENT
MATRIX

business, holding important posts since early in his career.

In December, 1956, Mr. Jack Wyness joined the select band who had completed 25 years' service with the firm, the occasion being celebrated at a very pleasant luncheon held in the Royal Oak Hotel, Wellington, when Mr. and Mrs. Wyness were presented with a silver-mounted occasional table by Mr. E. J. Isaac. Previously-honoured, long-service members of the firm are Messrs. Alfred Wyness, John Dunnet, E. J. Isaac, Harold Isaac and Ron. Bull, each of whom was the recipient of a handsome present.

To Cope with Demand, another Factory Opened

The increasing demand for records from the Company's large coterie of labels found a capacity Kilbirnie factory unable to cope with the calls made upon it, and the Company was forced to lease a building in Lower Hutt and establish there a second record factory. This was opened early in 1954.

The purchase of the mighty Capitol Records Inc. U.S.A. by the parent company in 1955 (at a cost of 8,500,000 dollars), and the consequent spate of additional pressings, particularly of long play and extended play discs, necessitated a great expansion of the Galvanics Department, where the production of matrices has been stepped up to 300 per week. At the same time, the record factory at Lower Hutt has reached a stage where it has been found necessary to institute double shifts in order to cope with the constantly increasing demand for records. Even this arrangement will not cope for long with the problem, and it has been decided to proceed immediately with the building of substantial additions to the existing premises. When this extension is complete the present pressing congestion should be greatly relieved.

Christchurch Branch Established 1955

In order to expedite the distribution of records and home appliances in the South Island, and, at the same time, reduce the pressure on floor space at headquarters, a branch was formed in Christchurch in May, 1955, under the joint control of Mr. Martin Brown, who for several years had been acting as traveller working from home in Christchurch, and Mr. James McGregor, from Head Office. This branch is flourishing today with a staff of six. Other executives at Head Office comprise Mr. Sam Heginbotham, Manager, Mr. Bill Dorset, Electrical Appliance Sales Manager, and Mr. Reg Johansson, Record Sales Manager.

Present Directorate

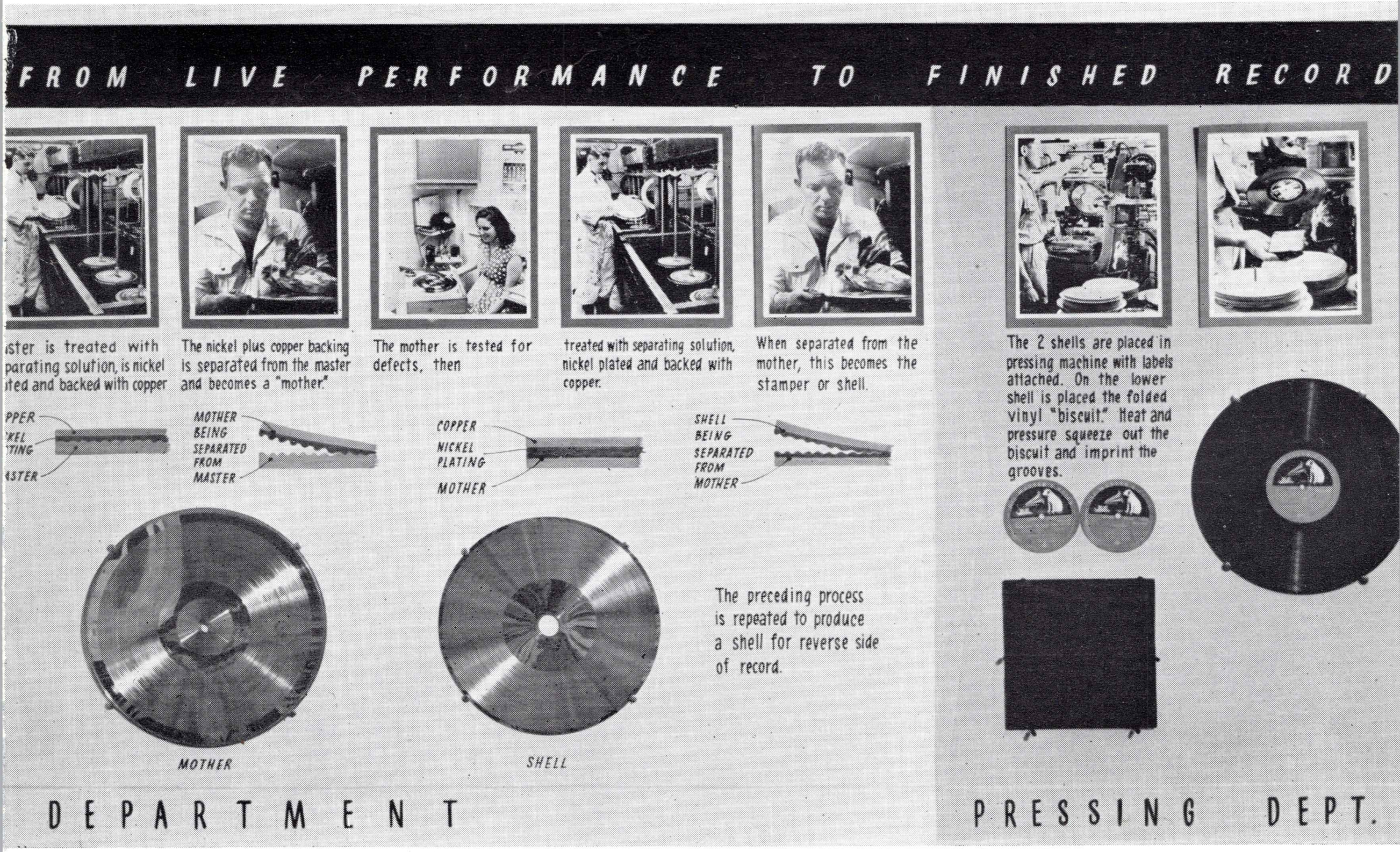
Mr. A. J. (Jack) Wyness, managing director and chairman, and Messrs. Ron. Bull, Edwin J. Isaac, and L. Sinclair Thompson, were appointed directors in 1945, when the New Zealand board was first officially formed.

The Parent Company Largest in Commonwealth

The parent company, Electric and Musical Industries Ltd., has its headquarters at Hayes, Middlesex, where the plant covers an area of 160 acres, and the personnel numbers approximately 20,000.

The world-wide E.M.I. organisation (known as the E.M.I. Group) has subsidiaries in 24 countries, employs 27,000 operatives, and had world-wide sales in 1957 of £61 million.

Mr. J. F. Lockwood, chairman of directors of the E.M.I. Group, during a recent visit to Australia and New Zealand, stated in an interview that E.M.I. in its various fields was the largest organisation of its kind in the British Commonwealth. It had also, apart from its significant position in the record field and in the manufacture of the familiar H.M.V. receivers and other consumer products, played a unique role in the development of specialised equipment for T.V. and radio stations. Commenting on the record market in U.S.A., Mr. Lockwood said that E.M.I. (including its Capitol activities) was now the largest record company in that country.


FROM LIVE PERFORMANCE TO FINISHED RECORD
PPER
KEL
TING
ASTER
MOTHER BEING SEPARATED FROM MASTER
COPPER
NICKEL PLATING
MOTHER
SHELL BEING SEPARATED FROM MOTHER
MOTHER
SHELL
DEPARTMENT
PRESSING DEPT.

ster is treated with parating solution, is nickel ted and backed with copper

The nickel plus copper backing is separated from the master and becomes a "mother."

The mother is tested for defects, then

treated with separating solution, nickel plated and backed with copper.

When separated from the mother, this becomes the stamper or shell.

The preceding process is repeated to produce a shell for reverse side of record.

The 2 shells are placed in pressing machine with labels attached. On the lower shell is placed the folded vinyl "biscuit." Heat and pressure squeeze out the biscuit and imprint the grooves.

In venetian blinds, fast growth to big business

HARNISH & JORDAN LTD

Carbine Road Panmure Auckland

Branch Factories: CHRISTCHURCH, INVERCARGILL, NELSON
Service Stations in Dunedin, Rotorua, Hamilton and Whangarei

One of the first companies to establish a factory on Carbine Road, Auckland, was Harnish & Jordan. It was to their modern premises that I was heading to find out for myself how Messrs. Harnish and Jordan had achieved their remarkable success as producers of Luxaflex venetian blinds within the comparatively short time of nine years.

Once I had found Carbine Road, it wasn't long before I was at the H. & J. factory and talking to J. T. (Terry) Jordan in his small but well-planned office. And here let me mention the Flexifold door through which I entered his office. One of their latest productions, it is a concertina-type folding door made of vinyl plastic welded into pockets which contain hardboard inserts. It runs on an overhead track and folds back into the door post.

"Saves 9 sq. ft. of swing space", he said, "and leaves more pass-through room. It's one of our newer developments. Very popular," he grinned. "We could have used a few in our first premises in Ngata Street to save space. It was a former bakehouse, 15 by 23 feet. We were making wooden venetians with cedar slats, but there was a timber shortage at the time and we had to take any old timber the mills cared to give us. Spray painting was a devil of a problem too. We had to stop every 30 minutes to let the fumes clear so that we could see what we were doing. It was tough going under such conditions.

Early beginnings

"It really all began in a garage on the North Shore, where a man was trying to make venetians. Another chap I knew was most impressed, and when he started up I went to work for him. The firm didn't last long, though, and when it was wound up Bob Harnish and I put in a purchase price—which wasn't much!

At this point R. W. (Bob) Harnish joined us. "We've been talking about the old days in 1949", Terry explained.

I was interested to learn that Bob Harnish had been first a telegraphist and then a boat-builder before he began to work for the small venetian blind factory.

"We operated under very difficult conditions", explained Terry Jordan. "The correct hardware was in short supply and the blinds themselves were difficult to make because we were forced to use incorrect equipment".

The advent of aluminium slat material

"We were going to chuck it in, but we'd had an application in for months for a dollar licence to get aluminium slats from the U.S.A. Bob had come to the conclusion that plastic wasn't the answer. The application had been turned down, but we had appealed. Still no luck. And then suddenly, just before the 1949 general election, we were granted £500 worth of dollars. That brought quite a change in the industrial outlook of Harnish and Jordan!"

"I think it was the last dollar licence granted for American venetian blind materials," Bob took up the tale. "When we got our first shipment, we thought we were made.

"How did you deliver your product?" I asked.

"We had a 1927 Austin 12 horsepower, 4-cylinder. Cost £135 — an outrageous price in 1949, considering we had to spend another £70 within about a month to keep it on the road. Fortunately the garage (it was Norm Morgan, of Speedway fame), gave us extended credit . . . or we'd have been out of business."

Gradually business picked up. The American shipment didn't last long and the partners began to wonder what to do next. The answer came when their American principals, Hunter Douglas, opened a factory in Holland. This assured them of supplies without the need for dollars. They celebrated the end of their first year by ploughing back all the profits into the business. Terry was only 24; Bob, 26.

They turn from retailing to manufacturing only

In early 1951, they branched out into wholesale work by supplying retailers. It must have seemed at the time a satisfyingly big business deal, but through the eyes of 1958 Terry says it was "wholesaling in a very limited way." The firm's first customer among retail stores was H. A. Taylor Ltd., an old-established furnishing house on the corner of New North Road and Dominion Road, Auckland, and gradually more and more large retail stores joined the ranks. That was when the Austin 12 really began to earn her keep.

Meantime, Harnish and Jordan Ltd. had grown out of their Ngata Street premises, so Bob and Terry scouted around and found a quarter-acre freehold property at the corner of France and Dacre Streets, Newton, within 1½ miles of Auckland's C.P.O. There they built new offices and a factory with 4,000square feet of floor space, giving them room to stretch a bit.

Out of luxury field into mass production

Rex Money joined the company in 1952 and was mainly instrumental in developing wholesale outlets. Today, he is sales supervisor and a shareholder. As output increased, production problems mounted and they decided to start making blinds with metal instead of wooden head and bottom rails.

"These were a Hunter Douglas product," says Terry. "We first saw them in 1953. No other New Zealand manufacturers would touch them, but we brought them out in 1954 and after we'd led the way others came along with them. The metal product enabled us to bring down the price — Venetian blinds are considerably cheaper today than they were from 1947 to 1949 — and to step up production from 70 to 200 blinds a day."

This meant going all out after wholesale work, and it wasn't long before the France Street premises were bulging at the seams. Once again, they turned their minds to factory construction. An extensive national advertising policy built up a growing demand from all over New Zealand. In June, 1954, the first Harnish and Jordan factory in the South Island went into production in Christchurch. The 4,000 sq. ft. area quickly became too small and H. & J. moved to larger premises, occupying 9,000 sq. ft.

They move to big new industrial area

Back in Auckland they bought property in Carbine Road, Mt. Wellington, and built their present modern factory there. In March, 1956, they started a 3,000 sq. ft. factory in Invercargill, and in September the following year, the Nelson premises of 1,000 sq. ft. They also established servicing depots in Dunedin, Hamilton, Whangarei, and Rotorua, as well as in Wellington, Palmerston North and New Plymouth.

"To give the public a service needs a specialist—for many reasons," explained Bob Harnish. "First, every blind is a custom-built article. Every window needs individual attention. Measuring and fitting are only two aspects calling for a trained man. The depots or service stations enable us to send a specialist out on behalf of the retail shop to the home of its customer, to measure the windows, to give the consumer the benefit of expert advice, to provide the answers to semi-technical problems, and subsequently to install the blinds. The same thing applies with Flexifold doors and Luxaflex Aluminium Awnings".

New products are added

It was in 1956 that Bob and Terry started to look around for ways of developing their range of products. The awning is one of the results. The pair made a world trip, visiting the U.S., the U.K., Europe, South Africa and Australia, studying the manufacturing and marketing not only of Venetian blinds but of the metal awnings, too.

"Overseas expert opinion considers them the best metal awning in the world," Bob went on. "We completely endorse that. It is a product with a tremendous potential; we haven't even scraped the surface of the market yet, but private homes, offices, shops and factories are installing them in growing numbers for sun and rain protection. They also add beauty to buildings. The high gloss paint has an extremely long life. The undercoat is baked on and the enamel baked over that."

Bob later showed me the ingenious machines used in making the awnings. Each is a piece of high-precision equipment. A thick manual of rules, covering every phase of know-how, provides a mine of information. To use Bob's own precise explanation, "Hunter Douglas spent 8,000,000 dollars to develop this awning to a point at which we can undertake the work of structural engineers in designing a specific awning for a specific application, by following the rules in the manual and using the various slide and roller charts to apply those rules. We can work out the specifications for ten awnings while a structural engineer, using involved mathematics, works out the specifications for one."

The upper panels of the awnings, carrying the colours, snap on and off, so a change of colour scheme would be simple if the buyer wanted to alter it after a period of years. The awning is scientifically ventilated to allow the escape of hot air trapped beneath it in a room or patio. It also allows light in through the vents.

In 1956, Harnish and Jordan developed a new type of fire-screen, the Curt-o-mat, made of fine brass mesh which can be opened or closed by simple manipulation of cords at one end. The following year, they developed the Flexifold Door and also started manufacturing vertical venetians, known as Luxaflex Draw Draperies. These reduce the problem of dusting blinds, almost eliminating it, as the vertical slats naturally do not hold dust as the horizontal ones do. This type is particularly suitable for certain applications, notably large landscape windows. They are in use in H. & J.'s own offices.

Audio-visual blinds are one of the products the firm is developing in 1958. With built-in light traps, they make a room very much darker than conventional venetians and are being specially engineered for TV, home movie and slide viewing activities. Harnish and Jordan have also entered the Holland blind field, manufacturing them of the finest Scotch Holland in a wide range of most attractive pastel shades — fadeless these days.

A flow-basis for production

Let's have a quick look through the factory and watch venetians being made. Bob Harnish is the factory expert, and no doubt owes something to his early boat-building experience and a natural mechanical bent. "We base production on a semi-chain system," he told me. "Everything is planned on a flow basis. The components come together at the right time, in the right place, for assembly. This machine has been specially designed for push-button control, for rail cutting and punching holes for the hardware to clip into. Once it is clipped on, the rails go to overhead booms, from which they hang throughout assembly".

He showed me how the cords and tape-drum are fitted, and then the tapes, which are awaiting the assembler in their correct sequence. Any slip-up here could be time wasting, for every blind differs from the next. The importance of correct sequence becomes more apparent when you learn that over 1,000 individual ladder tapes have to be cut each day in many different colours, in cotton and plastic, to suit customers' requirements.

Meanwhile, the spring-tempered aluminium slats have been cut from $\frac{1}{2}$-mile reels. It is really an aluminium alloy, already painted in a wide variety of colours, the double-baked enamel having been tropic treated especially for New Zealand conditions. "In California, our principals have had a piece of it in the sea for four years," said Bob. "That shows what rigorous testing they give it. They must have spent a fortune on research to find this particular type of enamel; no matter how we bend or shape the metal the paint never cracks."

The machine which cuts and bends the slats to the correct shape and size also automatically makes the holes and indentations for tapes and cords. The slats are assembled within the tapes, and the cords are threaded through, after the bottom rail has been clamped into position.

Huge capacity needed to fulfil requirements

The high capacity metal rail machines developed by Hunter Douglas can produce headrails and bottom-rails for 250 blinds a day. Harnish & Jordan have four of them in operation in Auckland and Nelson, Christchurch and Invercargill. Each lath cutting machine is capable of producing 4,600 square feet of venetian blinds daily. All this means carrying vast stocks — the value of raw materials in stock at any given time would be approximately £70,000. Hoist systems have been evolved for speedy and efficient unloading, and for moving materials from store to production line, saving many man-hours annually.

The blinds are finally tested for performance and carefully inspected before going to the rail or local bays for packing and despatch to the Company's 500 and more distributors. The firm makes extensive use of N.A.C. air-cargo services for quick and efficient country delivery. "We're dealing with lots of bulk but no weight," Bob Harnish pointed out, "so we've even designed a special articulated truck for shifting awnings to and from the factory.

They change brand names for uniformity

"By agreement, all firms using Hunter Douglas products, started marketing Luxaflex in 1957 instead of individual brand names. Before that, ours had been Extralite. We subsequently closed our Wellington, Palmerston North and New Plymouth service depots and concentrated on extending our service in the Auckland Province and the South Island. After our world trip that year, Hunter Douglas began taking an active interest in marketing their own Luxaflex trade name in N.Z.

It was in that year too, that Harnish and Jordan decided to broaden their directorate. Rex McCracken and Allan Gray, the Company solicitor, joined the board. H. and J. was formed into a public company with a capital of £77,000 — a bit of a change from the £300 they started with! They've a staff of about 100, an active social club, and various staff amenities. They were actually one of the last to enter the venetian blind field. Seven other companies started manufacturing before them, but they have grown the fastest of all and now supply about 35 per cent of all venetian blinds made. The majority of homes built today are fitted with them, says Terry. The venetian blind business in New Zealand now grosses over £1,000,000 a year.

A philosophy of continued expansion

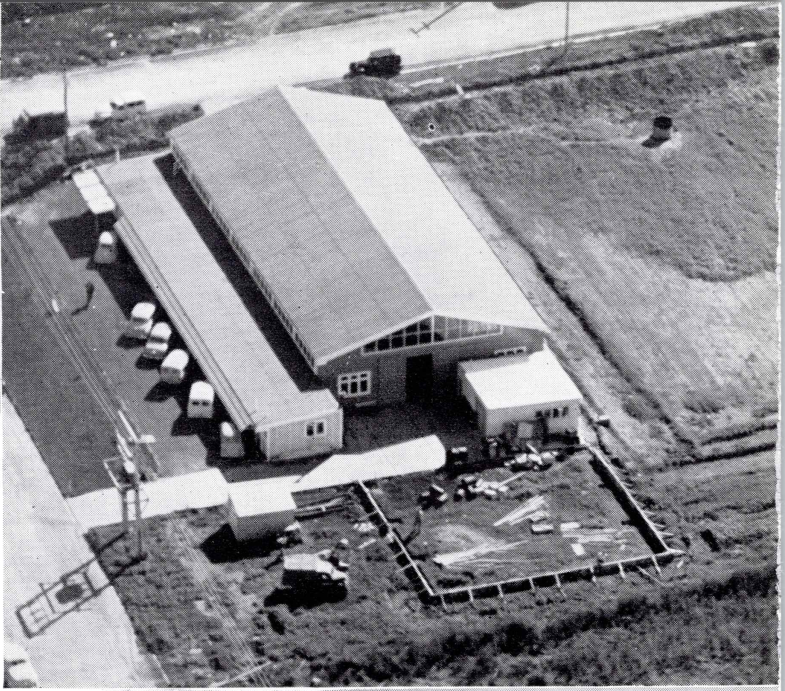
Why should this particular firm have grown faster than others? I put the question to Terry Jordan.

"For several reasons," he said, "The kind of assistance we've given retailers; we've kept faith with them; we appreciate their problems and they are satisfied with the service we provide. Then there are the customers; they are satisfied with the performance of the blind; the quality of the product makes it popular with the public. We sold about 70,000 venetian blinds last year. Having the right people on our staff, the right goods to sell, and sheer hard work. That's what's done it."

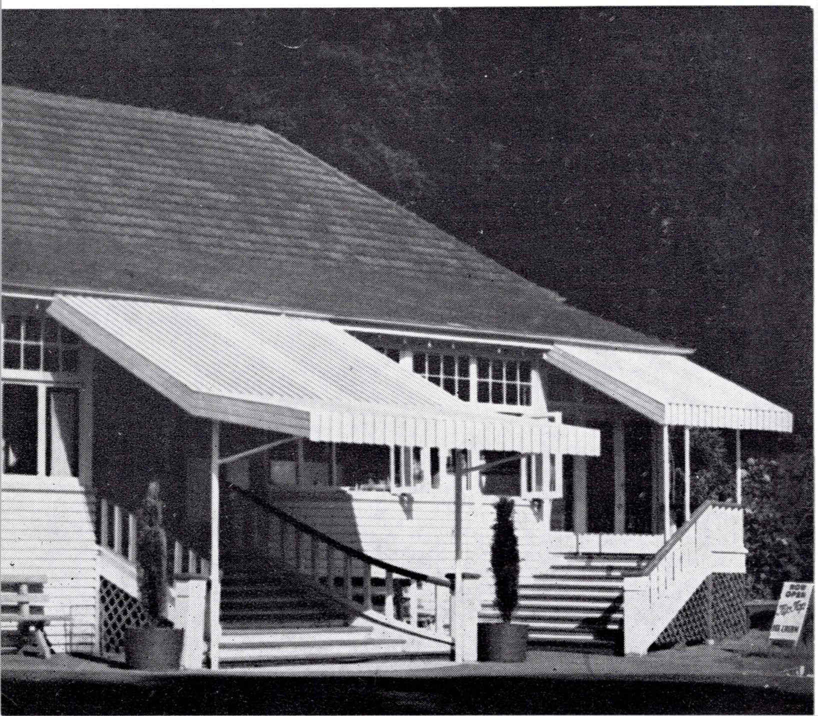
I would like to add resource to that list of factors influencing the Company's rapid growth. Messrs. Harnish and Jordan have met and overcome a thousand obstacles.

"We've got where we are because we stuck to our suppliers", added Bob Harnish, "and gained all we could from overseas experience. By the same token we stuck by our retailers and gave them what their customers wanted".

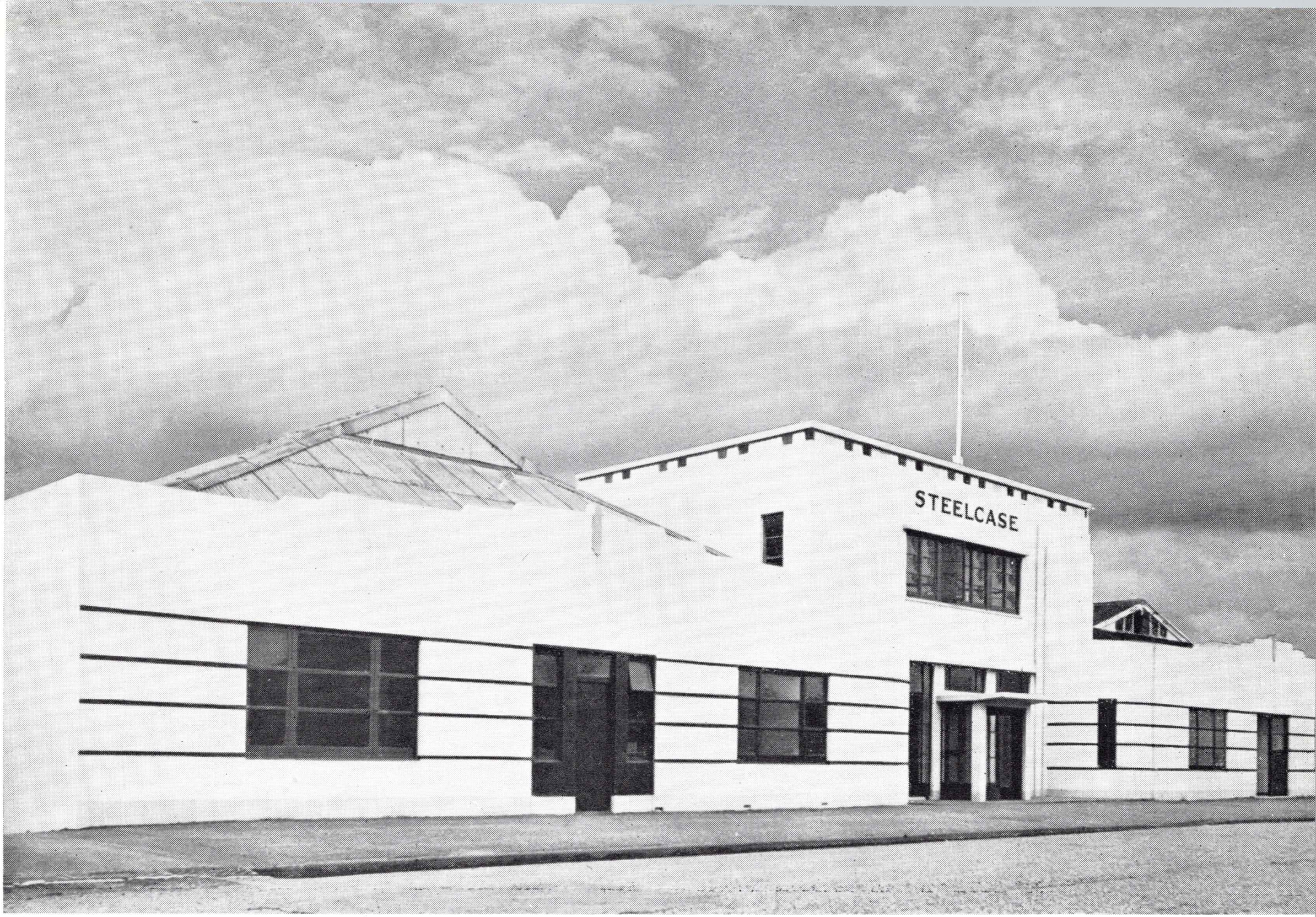
Although you won't find Carbine Road on any pre-1957 street map, within a year or two of the erection of the Harnish and Jordan factory in that area a great many venetian blind retailers throughout New Zealand could have told you where it was and why it meant such a lot to them. — Martin Collins.



In June, 1954, the first Harnish & Jordan factory in the South Island went into production in Christchurch, but its 4,000 sq. ft. area quickly became too small and H. & J. built larger premises covering 9,000 sq. ft. (above). They subsequently opened factories in Invercargill and Nelson, but before that they had twice outgrown their Auckland premises and had built a 13,000 sq. ft. factory in Panmure (top right). Soon, additions became necessary and the foundations of them appear in this White's Aviation photograph. Plans are already afoot, however, for yet further extensions on the cleared area. Below is a part of the Auckland factory with Venetian Blind manufacfacture in progress. In 1957, the firm turned out about 70,000 of them.



8,000,000 dollars went into developing the type of metal awning pictured at left on Auckland's Cornwall Park Tea Kiosk, where wedding guests may need weather protection from the moment they step from their cars. Drainage is ingenious: water is trapped at the break in the pitch and led down inside the supports to underground pipes. The double-baked, long lasting, high-gloss enamel in a variety of colours adds beauty to homes, offices, factories and shops. Scientific ventilation promotes the escape of hot air trapped below in rooms or patio, while light flows in through the vents. The Flexifold Door (above) in Mrs. C. F. Horrobin's lovely home at 6 Pukerangi Crescent, Auckland, concertinas along its track into a 5" x 5" space, saving the 9 sq. ft. swing-space a hinged door needs and enabling her to use the corner at right. It glides smoothly on nylon slides, cannot rattle or jam, and leaves more pass-through room. It is very easy to keep clean.



STEELCASE ENGINEERING LIMITED

Wakefield Street, Lower Hutt. Branch Factory: 89-91 Station Road, Penrose, Auckland

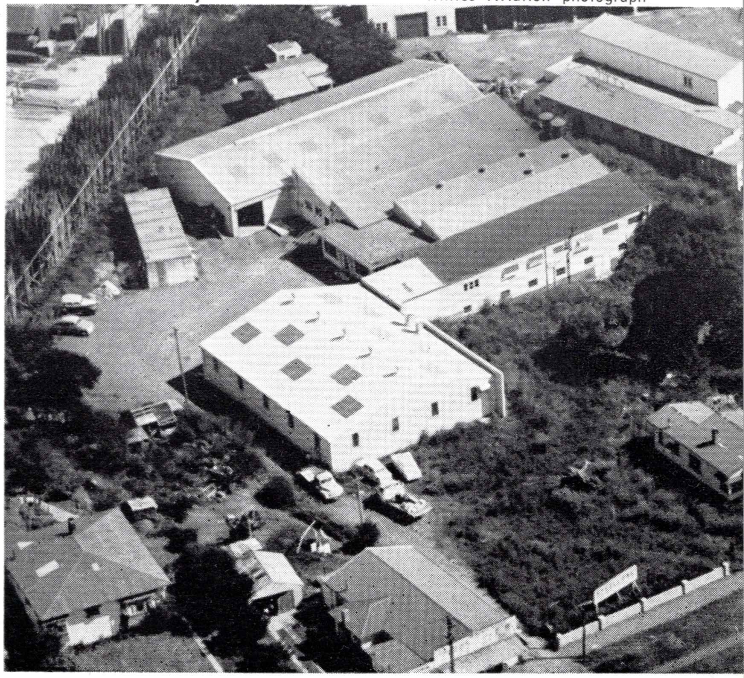
The Company of Steelcase Engineering Ltd. can be said to have originated in Motueka, under the name of the Motueka Metalwork Co., the proprietors of which were Mr. T. A. Anderson and his son, Mr. V. F. Anderson. The actual date of commencement seems to be rather indefinite — the firm progressed from its early days on a part-time basis, eventually to full-establishment.

Initially, the Company operated as a jobbing sheet-metal shop, with the emphasis on items of a rural nature, such as tobacco kilns, sheet-metal items for, and used in, the growing, etc. of hops. In the course of time, an interest was taken in the manufacture of various types of sheet-metal office equipment, and this interest was stimulated, in 1938, by the imposition of Import Control, which tended to restrict the importation of such equipment from overseas. As the manufacture of this type of equipment developed, it was realised that a more central location was desirable, and a decision was therefore taken to transfer to Lower Hutt. As a result, in 1940 the present Company was incorporated under the Companies Act, as Steelcase Engineering Limited, the object of which was the manufacture and distribution of steel Office Equipment of all kinds. Factory premises were obtained and machinery installed, and at this stage the staff consisted of Mr. T. A. Anderson and Mr. V. F. Anderson.

Changeover to War Production

At this stage, the country was at war, and the development of a range of steel Office Equipment was not easy, due to the difficulty of procuring raw materials, etc. However, progress was made, and a nucleus of a staff was obtained. As the quality of the workmanship of the products of the Company

The Steelcase factory at Penrose. Whites Aviation photograph



became known, the authorities became interested in its potentiality as a supplier of munitions of one kind or another, with the result that, by the time the war ended, the Company had produced considerable quantities of articles for the various Services, and, in fact, was responsible for several innovations and improvements in the manufacture of service requirements. At the same time, and as circumstances allowed, every endeavour was made to extend the range of Office Equipment manufactured, and considerable progress was made, notwithstanding the many difficulties.

During this stage, additional capital was brought into the business, which was then controlled by Mr. T. A. Anderson, and Mr. V. F. Anderson, as joint Managing Directors, together with a Board of Directors representing outside shareholders. By the time the war ended, the products of the Company were being distributed throughout New Zealand, through a system of authorised agents, and had become widely known throughout the trade as equalling, or exceeding, the quality of imported steel Office Equipment.

A Factory at Penrose to Serve Auckland Area

The Company continued to expand as progressive additions were made to its manufacturing capacity, and in 1952 a decision was made to establish a factory in the Auckland metropolitan area. Here again, progress has been swift, and the floor area of the Auckland factory, which is situated at Penrose, exceeds that of the Lower Hutt factory.

Present Board of Directors and Executives

During this period of growth, there was also considerable expansion in the staff, both executive and factory. Mr. T. A. Anderson, owing to ill health, has retired from active participation in the Management of the Company, but retains a seat on the Board of Directors. The present Board of Directors is as follows: Messrs. W. G. Taylor (Chairman), Mr. J. Cable (Vice-Chairman), Mr. E. Diehl, Mr. C. S. Turner, and Mr. T. A. Anderson. The principal executive staff are: Managing Director, Mr. V. F. Anderson; General Manager and Secretary, Mr. D. H. Whitcher; Sales Manager, Mr. J. W. Vandersyp; Lower Hutt Factory Manager, Mr. F. Klee; Penrose Factory Manager, Mr. J. F. Band. Currently, five salesmen are employed, and the total staff is approximately eighty.

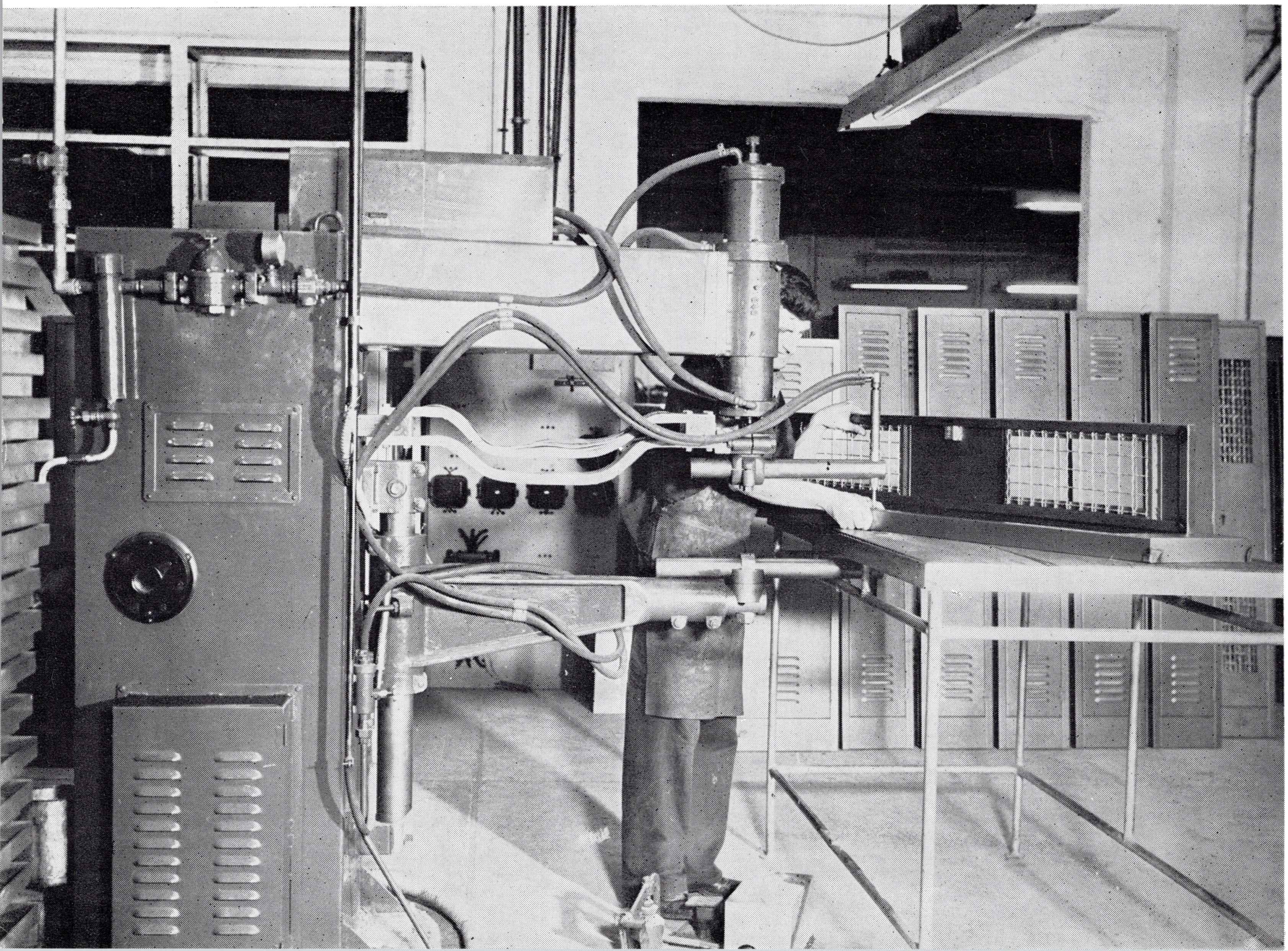
The basic raw material used is, of course, sheet metal, supplies being obtained from various sources in England and Wales.

Range of Products and Output Capacity

The Company makes a very full range of Standard Office Equipment, such as Desks, Tables, Chairs, Filing Cabinets of various kinds, Document Cabinets, Bookcases, Cupboards, Clothing Lockers, as well as a most complete range of Steel Shelving which comprises five different types. Recent expansion of manufacturing facilities has been such that the Company is well equipped to fulfil all normal demands for these types of Cabinets.

An interesting recent addition to the Steelcase range of standard products is Steel Partitioning for commercial offices, and warehouses. These partitions are either of the dwarf type, or full-height, or floor-to-ceiling type, and have aroused considerable interest in the architectural and building construction field, on account of their competitive price in comparison with alternative materials, and the particular qualities they possess in being durable and fire-proof. An outstanding advantage is their complete moveability — the sub-divisional plan of any building, if equipped with this type of partitioning, can very readily be completely altered by a rearrangement of

A PNEUMATICALLY OPERATED, automatic cycle 18 KVA spotwelder at the Steelcase factory, Lower Hutt.



the component panels, without the slightest damage to the building structure.

In addition to its normal production lines, the Company carries out from time to time various special jobs of some magnitude for various Government departments, and commercial undertakings.

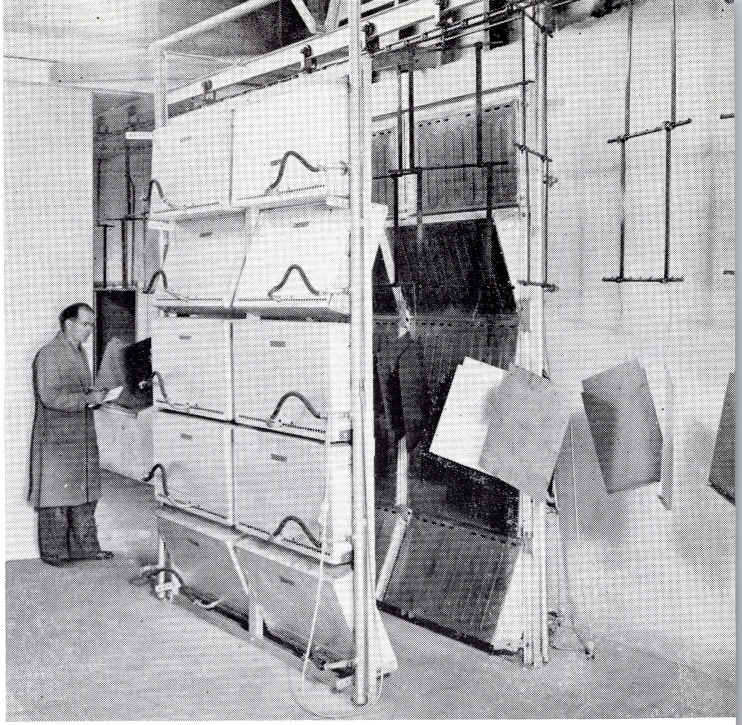
Economical Coverage of N.Z. Market

As previously mentioned, the founders of the Company first commenced business in Motueka in the South Island, but since the incorporation of the present Company, manufacture has taken place at Lower Hutt — a very central point for the economical distribution of its products throughout New Zealand. In view of the very great development taking place in the Auckland Province, the branch factory was established at Penrose to serve in part the local market, although goods manufactured at Auckland are also distributed throughout New Zealand. Both factories are equipped with up-to-date plant for the most efficient and economical manufacture of the various products, and, being located in the very centre of the large population areas, are placed in a competitive position in relation to the importation of similar lines from overseas.

Possible Plans for Expansion

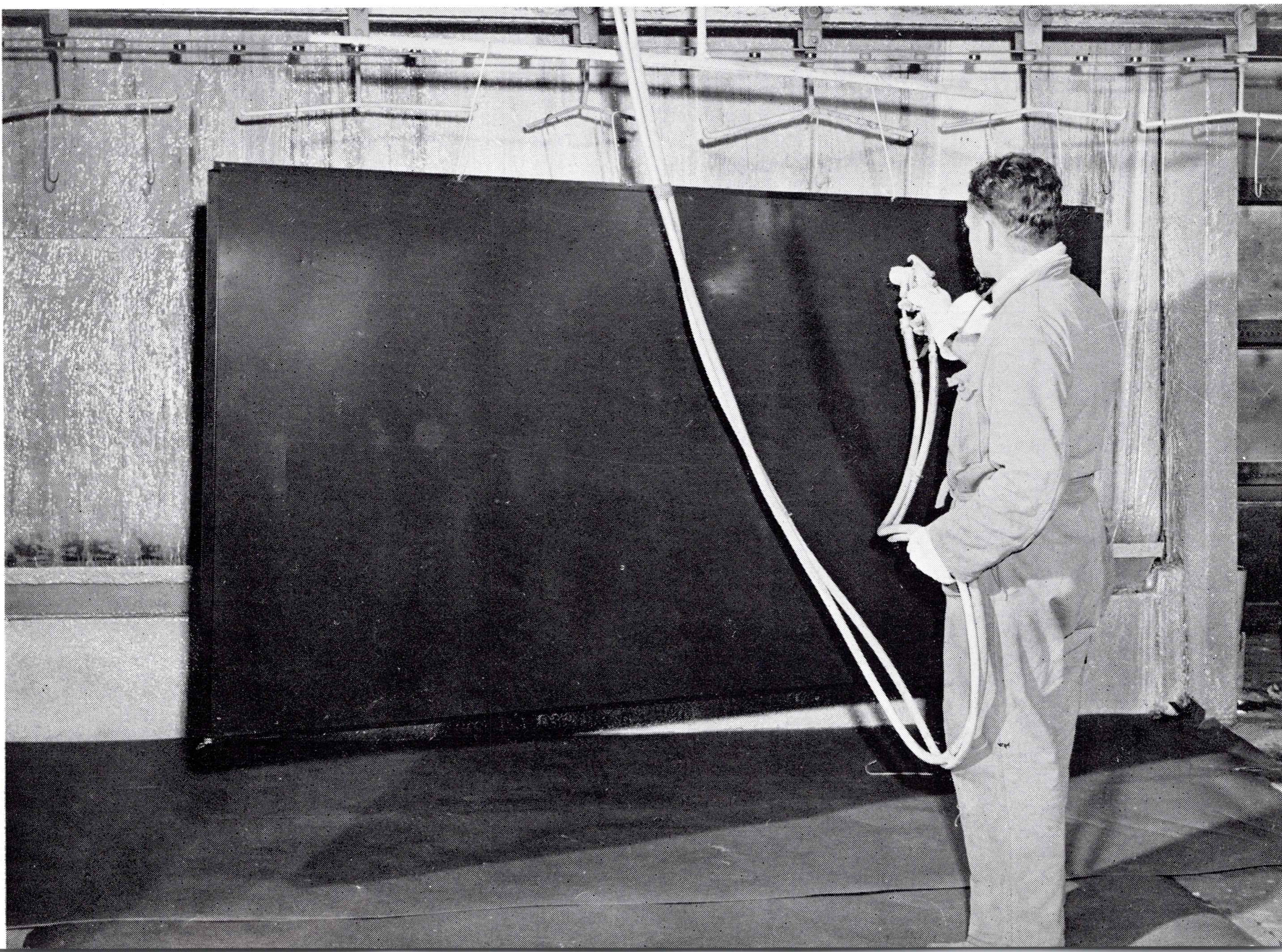
The Company is working to a long-term plan for future expansion in line with the results achieved in the past, and its Research Department is continuously engaged in assessing the potentialities of any new products.

The Directorate and the Management of the Company have the utmost confidence in the future development of New Zealand, and are determined that this Company will contribute its full share to such development.



ONE OF THE UP-TO-DATE PAINT LINES at the Steelcase factory, Penrose.
Sparrow Industrial Pictures.

WET-BACK PAINT BOOTH, with conveyor chain transport through infra-red baking oven.



AJAX GKN LIMITED Seaview Road, Lower Hutt

AJAX
AJAX GKN LIMITE
GKN LIMITED

Front portion facing Seaview Road of AJAX GKN LIMITED'S factory, Lower Hutt.

The Company of AJAX GKN LIMITED was registered in 1939 as the Ajax Bolt and Rivet Company, with the object, as the name suggests, of producing bolts, nuts, rivets, etc. Twelve months later, these products commenced to roll from the new factory at Lower Hutt.

Unfortunately, the formation of the Company and the commencement of production coincided with the outbreak of World War II, and, as a result, the attendant war-time problems of obtaining plant and satisfactory raw materials posed more than the usual type of difficulties associated with the inauguration of a manufacturing enterprise.

Early Production Bent to War Effort

However, the industry was established and, in the initial stages, a substantial part of the factory production was directed to the defence effort. In the immediate post-war era, Ajax products contributed greatly not only to rehabilitation within New Zealand but to that of other countries provided for by the Eastern Supply Group.

Today, the industry, by its contribution, plays a substantial part in the economy of the country, and is well established.

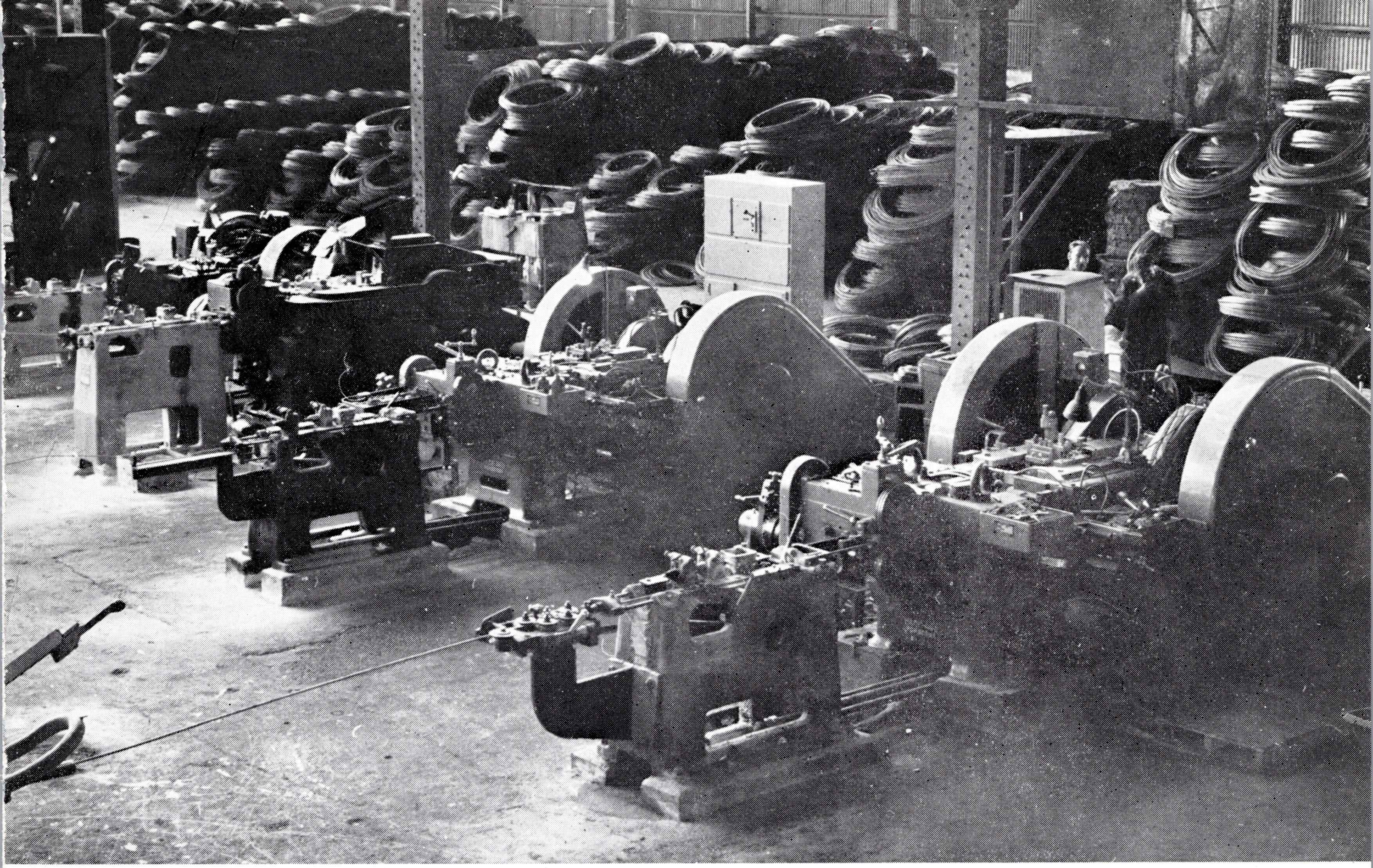
A Partnership of Large Overseas Firms

AJAX GKN LIMITED is a partnership of two large overseas organisations, each of which is vitally interested in the production of similar types of material to that produced in New Zealand by Ajax. One of these is McPherson's, Melbourne, an Australian company concerned in substantial manufacturing undertakings, and makers of "Ajax" bolts which were so well known on the New Zealand market prior to the commencement of the New Zealand Company. As merchants, McPherson's maintain a warehouse in the capital city of each of the Australian States.

One of the original partners of the New Zealand Company, the Australian firm was recently joined by the internationally well-known firm of Guest Keen & Nettlefolds, of Birmingham, England.

New Shareholding Brought a New Name

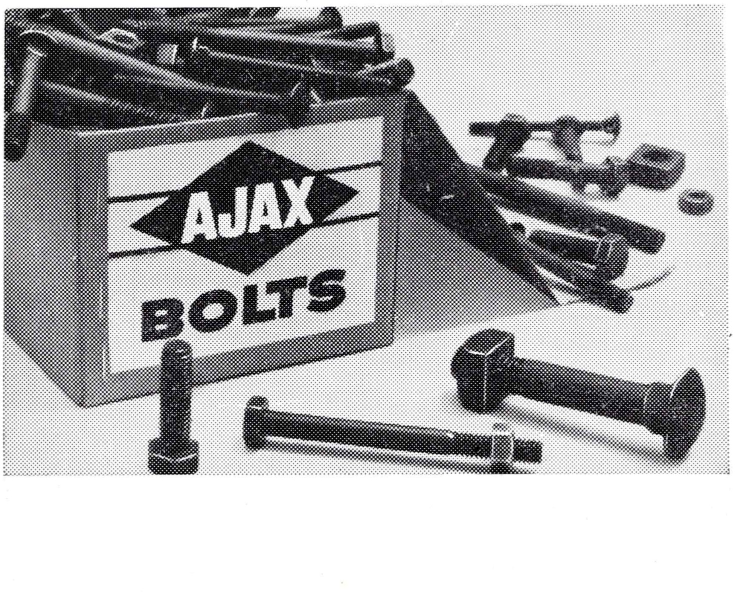
As a result of the joint shareholding, the name of the Company was changed from Ajax Bolt & Rivet Company to AJAX GKN LIMITED. By the use of the trade name of one partner and the initials of the other, the new name gives an indication of the Companies concerned.



A section of the Bolt Cold Forging Department.

Guest Keen & Nettlefolds Limited is a household word in the hardware trade as suppliers of bolts and nuts, wood screws, etc. This group of Companies has wide and varied interests, and is particularly well known as suppliers of steel sections and plates from its steel rolling mill at Cardiff, England.

With such a percentage, AJAX GKN has the benefit of the technical assistance which is so necessary to the well being of the organisation and to the rendering of service expected by its customers.



Ajax Nuts and Bolts, manufactured in Lower Hutt.

Bolts, Nuts, Hinges and Insulator Hardware

Production from the plant of AJAX GKN covers the normal range of black bolts and nuts required by the local market, in diameters from ¼in. to 1½in., used in the engineering and woodwork industries, and galvanised insulator hardware for power-line construction.

The Company also produces steel butt hinges for the building and cabinet-making trades.

Special upset forgings, within the sizes mentioned, can be made to specification, and plated and hot-dipped galvanised finishes can be given on a varied range of work.

An Up-to-date Production Line

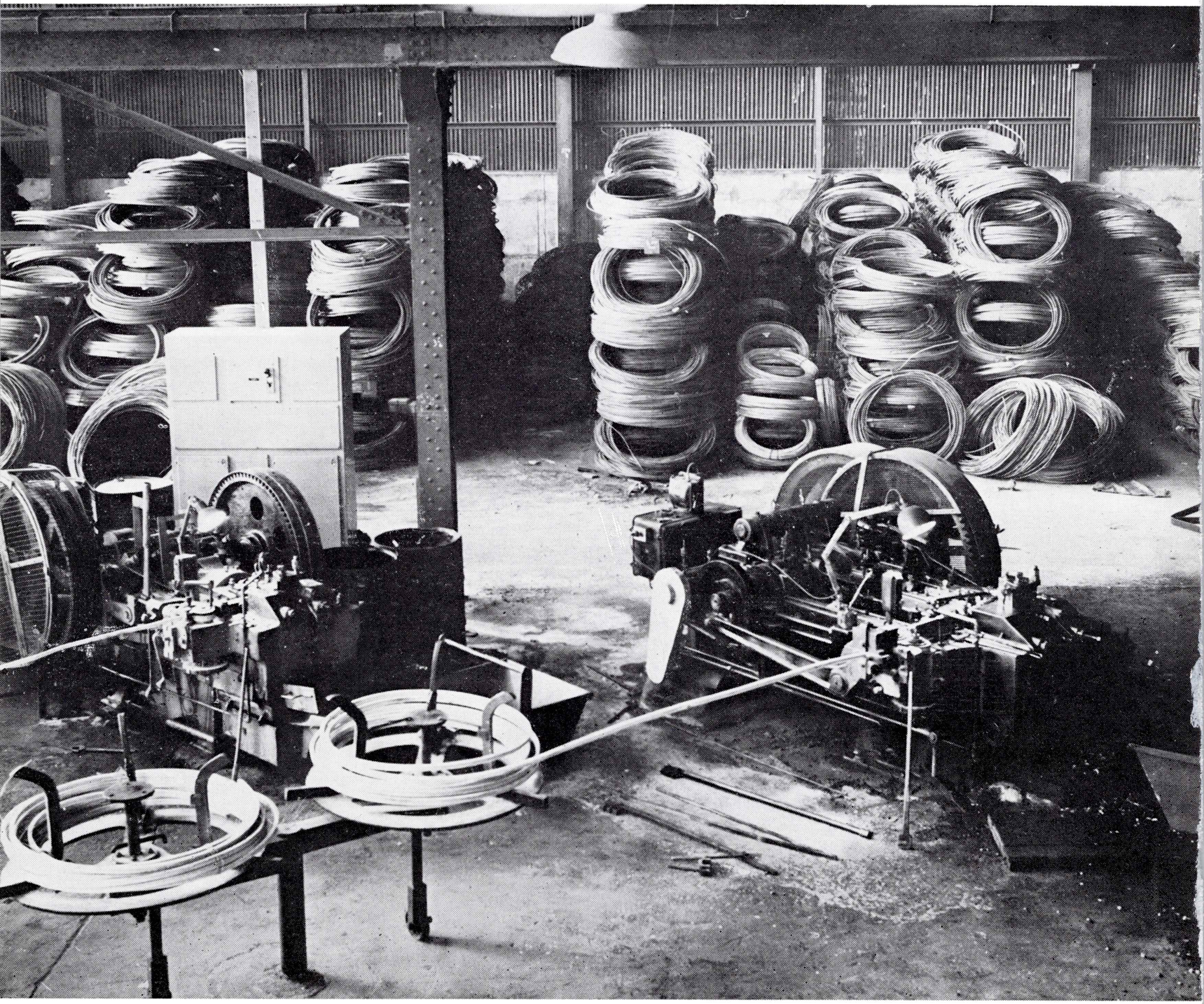
The plant in the modern factory at Lower Hutt has been designed to meet the needs of the New Zealand market, and as such favourably compares with that used anywhere in the world.

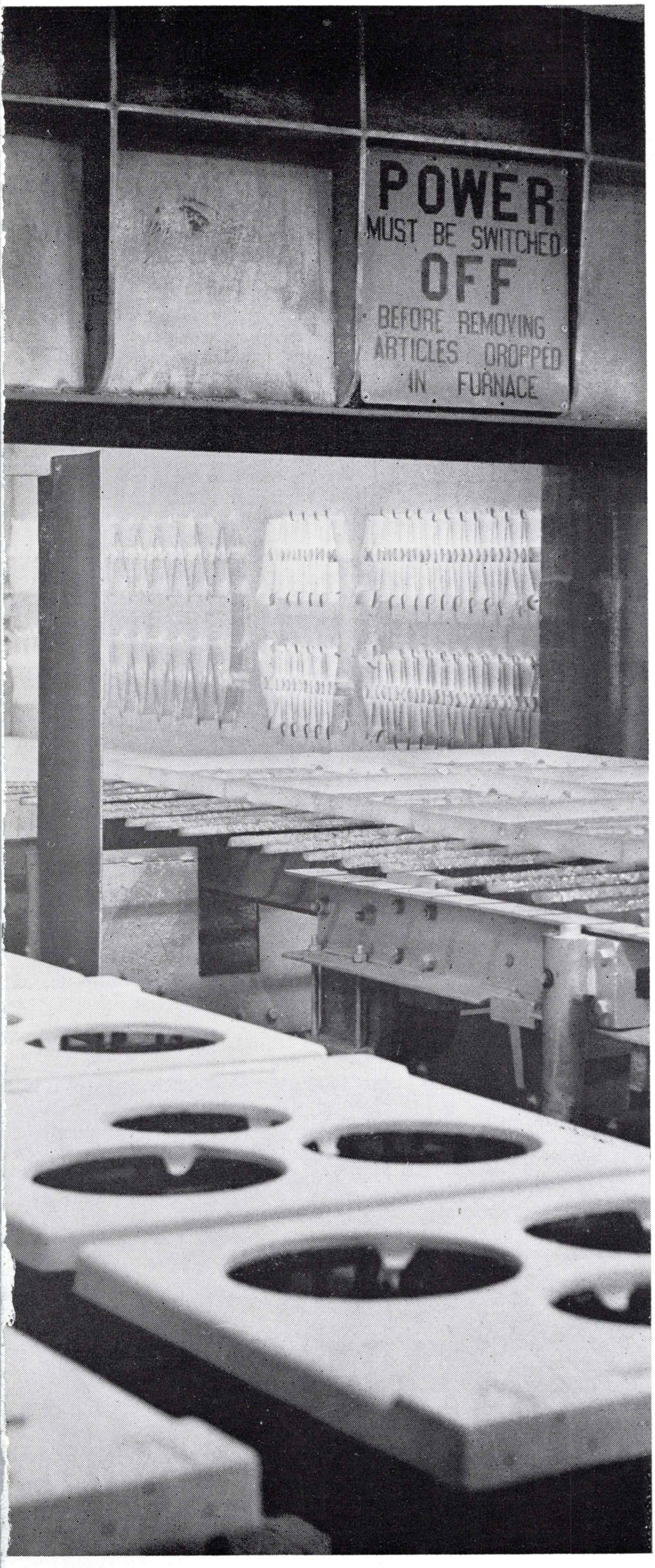
In the manufacture of bolts, the bulk of production is done by "cold" forging and thread rolling, which gives a quality product, both in strength and dimensional accuracy.

Constant watch is kept on the need for plant improvement and the use of new ideas, and continual contact is maintained in the use of overseas methods, both through associate interests and by observation of the Company's own technical staff.

This is an industry to serve industry, and one of economic and strategic value to New Zealand.

Some of the Plant used in the Nut Forging Department.





THE PORCELAIN ENAMELLING DEPARTMENT. Cast iron range tops leaving an electric furnace after the first enamelling operation. These furnaces operate at up to 1550 deg. F.

From Steam Engines to Electric Ranges

SCOTT BROTHERS LTD

65 Manchester Street, Christchurch
Branch: 55-57 France St, Auckland

One could not travel far in the Dominion today without soon discovering that almost every other housewife was at least familiar with the name "Atlas", which in this country is largely synonomous with electric and coal range cooking. Nor, indeed, should there be anything very remarkable about this, seeing that the makers, Scott Brothers, pioneered the manufacture of that most essential household utility, in this land, 80 years ago. However, what would amaze very many would be to learn of the diversified nature of the work this concern has undertaken since its inception. It will be readily appreciated that it is not possible to give much more than a thumbnail sketch of these activities, but this article will serve to show something of that hardy pioneer spirit with which so many of our early settlers were imbued; men who possessed a large measure of initiative, courage and faith and, above all, were not afraid of hard work.

It was in the year 1870 that the two brothers, John Lee Scott and George Scott, arrived in Lyttelton. Both were highly skilled patternmakers and engineers, having served their apprenticeship at the Atlas Engineering Works, in Derby, England, from which association many of the products of the firm were later to derive their name. For a short period, the brothers were engaged in the erection of cottages, but they soon felt the urge to return to their craft of engineering. They purchased a foundry business in Christchurch, and invited two other brothers in England to come out and join them in the venture. Of these, Moses Scott was an outstanding engineer and draughtsman, and William, a moulder. From the outset the brothers were keen and progressive in their business outlook, and very early they were successful in obtaining a Government contract for large quantities of castings.

The original foundry was situated in Durham Street, Christchurch, but in 1876 a section of one acre in Manchester Street was purchased. This is the present location of the Atlas Works. Later, as business grew apace, additional adjoining land was secured, until today these modern Works cover an area of three acres.

In 1882 Railway Locomotives were built by Scott Brothers

Back in the '70s, Scott Brothers were already pioneering many engineering lines required for the varying needs of the early colonists. These included the manufacture of steam engines, seed strippers, Cambridge rollers and windmills, as well as other agricultural implements. Then, in 1882, they made history by securing an order from the Government for the building of 10 D class railway locomotives, a big contract to undertake. Incidentally, these gave really outstanding service to N.Z. Railways over a very long period of years. At this time, vertical steam engines were in great demand throughout the country, and the firm produced countless numbers of these, together with steam boilers when steam was the predominant medium of power. Particular pride was taken in the 650 h.p. Corliss type engine, which was designed and built for the Kaiapoi Woollen Company. Until recent years, this engine drove the whole of the mill machinery, and, besides being the largest ever built in this country, was acclaimed by those qualified to express the opinion as one of the finest engines of its type they had ever seen.

SHEETMETAL FABRICATING DEPARTMENT: Spot welding an electric range front.

Notable Achievement — A Gas Producer for Power

A notable effort of the firm was the construction of a patented Gas Producer. This method of obtaining gas for power purposes was the invention of J. L. and George Scott. It had an entirely different principle from other gas plants, and was constructed to produce gas from cheap lignite coal. Numerous plants were sold, varying in capacity from 25 to 500 horsepower. Naturally with the introduction of electricity for power purposes, both steam and gas plants became very largely outmoded.

On the structural side, Scott Brothers built and erected some of the then biggest bridges and viaducts in the country, built and erected water towers, and carried out numerous kindred undertakings of an engineering nature.

At different stages of the history of the firm it has manufactured lines using water, steam, gas, coal and electricity as their source of heat or power: water turbines, steam engines, steam boilers and steam cooking equipment, gas engines and gas producers, coal and electric ranges as well as numerous other domestic cooking and heating appliances.

When Fuel Ranges Served the N.Z. Housewife

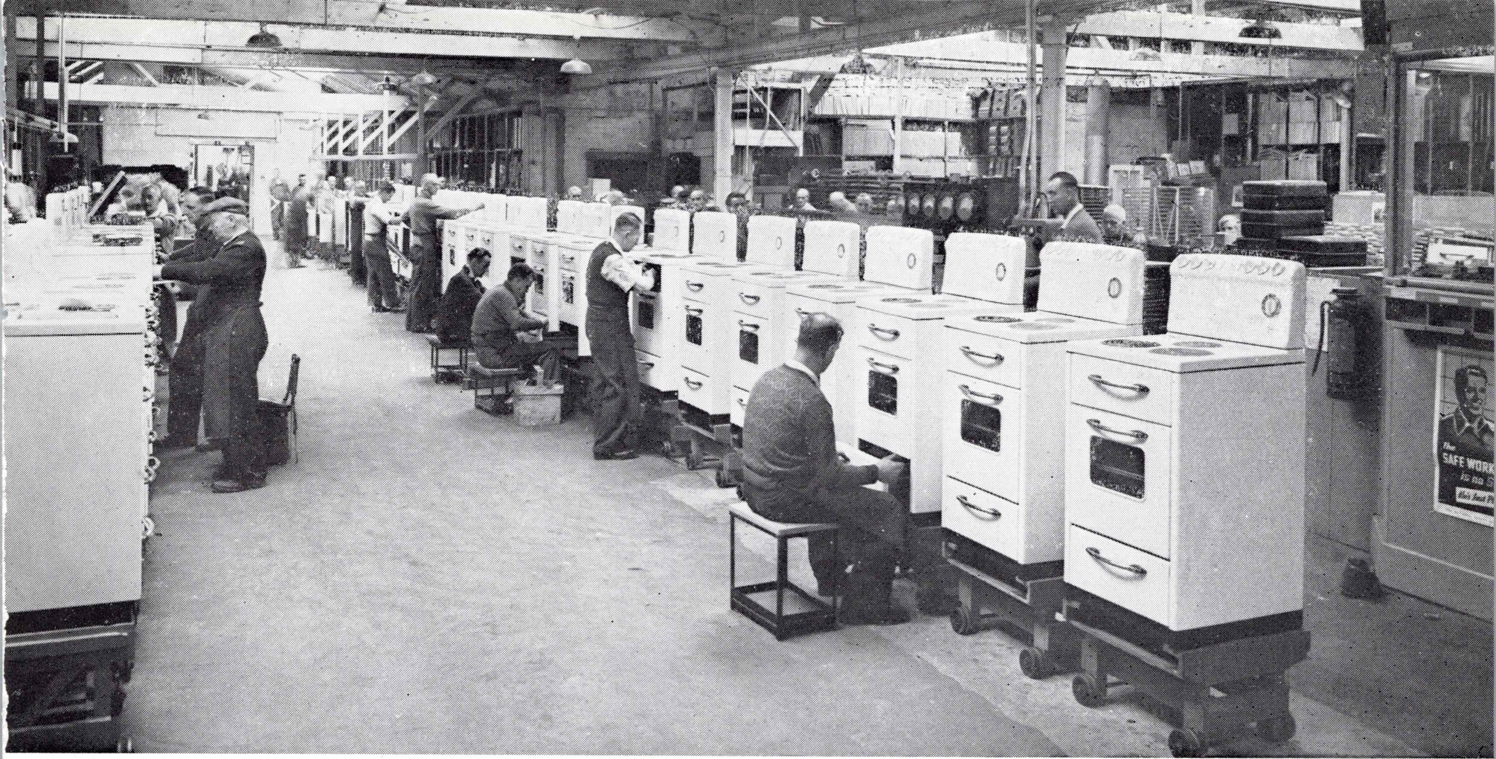
Over the years, many thousands of fuel ranges were manufactured and installed in homes throughout the length and breadth of New Zealand. It has been calculated that these may have totalled 150,000 — a colossal figure, in view of the small population of the country up to recent years. Furthermore, many up to 18 feet in length were built and installed in hotels and restaurants. These ranges gained numerous awards in Exhibitions and Shows, and, as thousands of housewives could testify, in many instances, they gave excellent service for 50 years or more.

From the manufacture of fuel ranges, it was a logical sequence when the transition stage was reached that Scott Brothers should embark upon the designing and production of electric ranges, especially as this was far from being their first experience with electrical equipment. In 1905, they generated the current for lighting the huge New Zealand International Exhibition, held in Hagley Park, Christchurch, from a plant entirely built by them.

In Timaru, Electricity, while Others Groped in the Oil and Gas Stage

About the same time, the town of Timaru was reticulated for electricity by the firm, and, for many years, the current for lighting and power was generated by them, the plant being finally sold as a going concern to the Timaru Borough Council. This was at a time when many larger towns and cities were still groping in the oil and gas lamp stage.

POURING MOLTEN CAST IRON into moulds for electric range tops.



ASSEMBLING THE ATLAS RANGE: Up to 100 may be seen on the line at one time.

Later, as the country gradually became reticulated with electric power, it was inevitable that there should develop a tremendous demand for modern cooking equipment to supercede the old-type fuel stove. So, in 1931, the Company embarked on a programme for the production of electric ranges. The changeover for this vast undertaking was revolutionary, and proved to be a huge enterprise, involving extensions to buildings and plant to enable the ranges to be mass-produced. Prior to this, a porcelain enamelling plant, one of the first to be installed in New Zealand, was operating in the enamelling of baths, sinks, sign plates, etc., but, so rapidly did the electric range industry develop, it was found necessary to concentrate upon it, and cease the manufacture of baths and sinks.

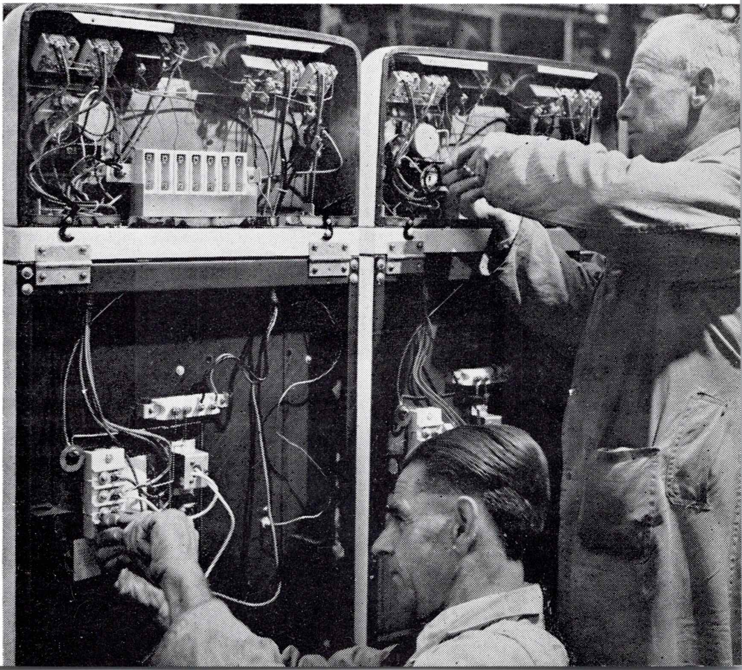
How the Atlas Electric Range is Made

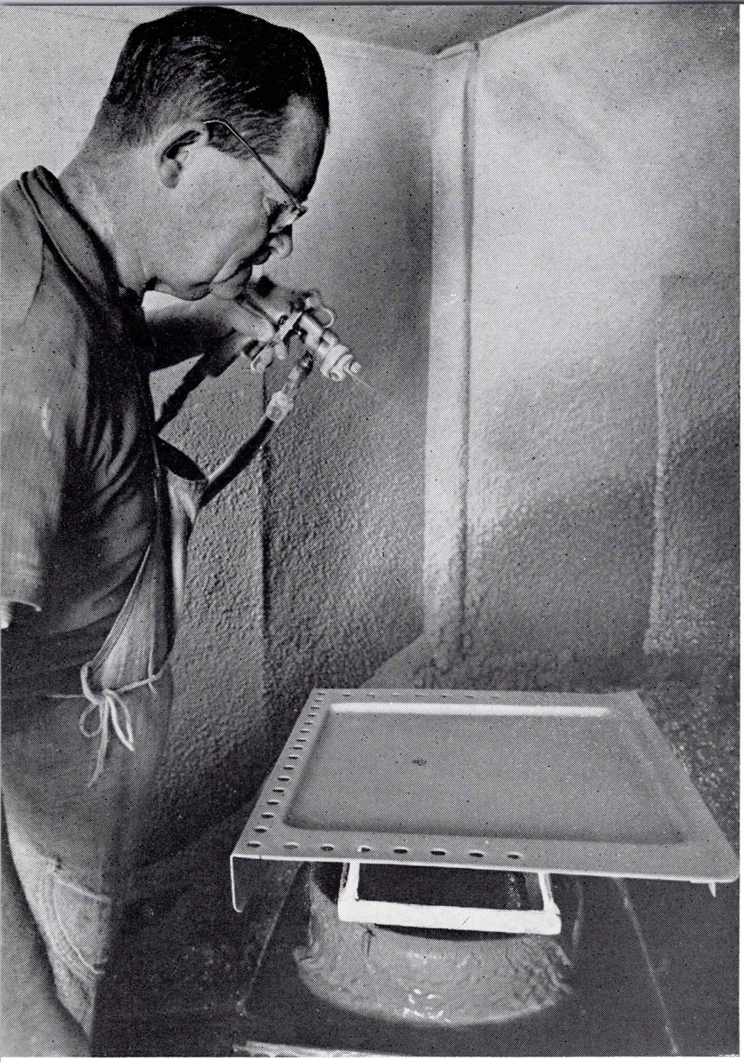
And now, a word about the actual manufacture of "Atlas" Electric Ranges, of which more than 200,000 were produced from 1931 to 1957. These are, of course, mass produced, and up to 100 may be seen on the assembly lines at any one time, giving the impression of car assembly lines in miniature. Firstly, the sheet iron parts are cut to size in large power guillotines and formed to their final shapes in presses. It is not uncommon for up to five or six precision built dies to be required for one range part, to cover the various operations necessary. The cast iron parts, which are relatively few, are moulded in the foundry. From this stage, those to be porcelain enamelled are treated; the sheet iron parts are pickled in acid baths to remove grease and other impurities from the metal, and the cast iron parts blasted by the application of steel shot at a high velocity. These processes assist the enamel to adhere and flow evenly on the surface when fired. The enamel, which is imported in frit form, is ground very finely (along with other ingredients) for many hours in large revolving mills, to ensure absolute smoothness of texture. At this stage, the range parts are dipped in tanks containing grip coat enamel, are thoroughly dried out, and then fired in a furnace at a high temperature, up to 1550° F, when the enamel fuses to the metal. Cover and finishing coats are sprayed on and the firing process repeated with each coat. Careful checking and testing is essential at this stage to ensure that the finish is of a high standard, as this is a vital factor in the finished product. All parts are transported to the assembly department and placed in bins adjacent to where they will be required. As the ranges move down the lines and are built up stage by stage, constant supervision is exercised and the final testing is meticulous.

Munition Work During War Years

Through the war years, 1939-1945, the Company was actively engaged in the production of munitions, including hand grenades and mortar bomb bodies, also ammunition boxes, drinking mugs, etc. The total of these amounted to many millions of pieces. In recognition of the factory's effort one of our employees was awarded the M.B.E.

A STUDY IN CONCENTRATION: The assembly of wiring to the back of the range.





PORCELAIN ENAMELLING DEPARTMENT: Spraying porcelain enamel to give a mottled finish.

The Social Side is well catered for

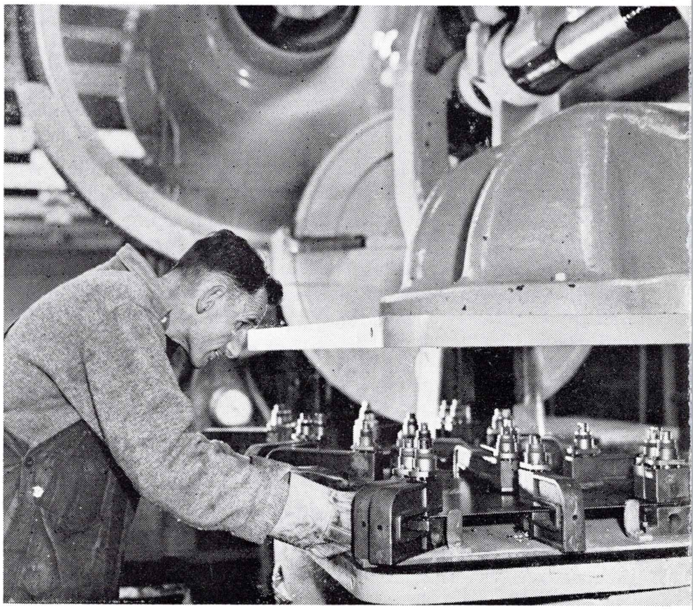
The social side, too, has been widely catered for with various sporting activities, throughout the years. Nearly 50 years ago, the Atlas Cricket Club was formed and won honours in the Christchurch City and Suburban competitions. At the present time, a strong Cricket Club (holding the premier position in its grade), Indoor Bowls Club (runners-up in the rinks at the 1957 N.Z. Championships), and Miniature Rifle Shooting Club (which has won the competition in its grade for the past three years), all receive enthusiastic support. In addition, the Social Club cares for such activities as the firm's annual picnics, children's Christmas parties, dances, smoke concerts, etc., as well as regular picture evenings throughout the year. Also on the welfare side, a generous superannuation scheme, subsidised by the Company, is in operation.

Scott Brothers was formed into a public liability company in 1898, the shareholders being limited to members of the Scott family, and to this day all the shares remain in their hands.

All Efforts Bent towards Increased Production

Today, although the Company makes nearly half of the total number of electric ranges manufactured in the Dominion, the demand still greatly exceeds the supply and every endeavour is being made to build up production as speedily as possible. To this end, a progressive forward programme is in hand which envisages big increases in production and, under the guidance and direction of a third generation of Scotts, in the person of Mr. C. S. Peate, who, as manager and chairman of directors of this Company, with a staff of more than 350, has displayed the zeal and enthusiasm so well demonstrated in his forbears, it seems certain that the firm must advance to even greater achievements.

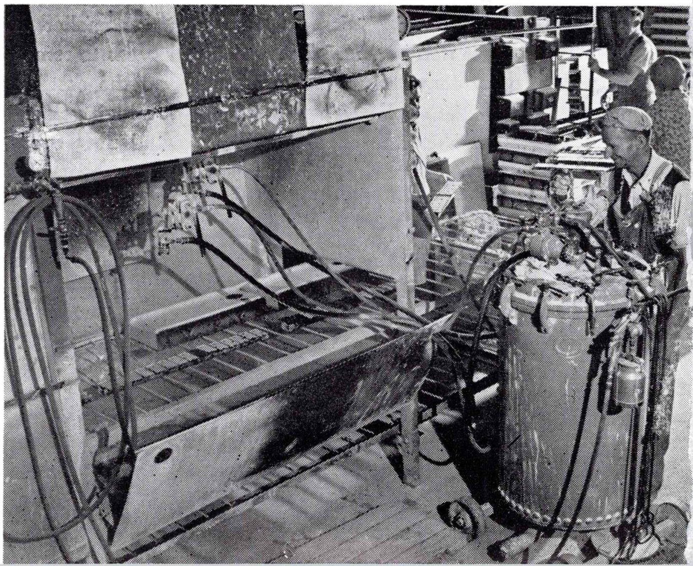
Looking back, it seems a far cry to the days when steam engines, structural ironwork, and the like, constituted the life blood of this very old established engineering firm, for today, electric ranges represent more than 95 per cent of the total sales. How surely: Time marches on!



THE SHEETMETAL FABRICATING DEPARTMENT: Multi-perforating sheetmetal electric range panel in 100-ton press.

A SECTION OF THE CONVEYOR TYPE BOOTH for spraying white porcelain enamel.

All photographs: Mannering & Donaldson Ltd.



Piston Rings By The Million For The Internal Combustion Engine

ASSOCIATED ENGINEERING (N.Z.) LTD

Jellicoe Road, Mt Wellington, Auckland

The skilled technicians on the staff of Associated Engineering (N.Z.) Ltd, Mt. Wellington, are engaged on a specialised task: the manufacture of precision products for the automotive industry — pistons, piston rings, cylinder liners and kitsets. It would be fair to say that no factory in New Zealand works to closer production tolerances than does this one, and each component that goes on the shelves of the retailer has been faithfully made and tested.

Last year, the number of rings produced approached the 2,000,000 mark, pistons totalled 150,000 (290 different types), and cylinder liners and kitsets 15-20,000. If a new ring is needed for the Model A Ford or the Chevrolet of the 1920s, it will be available, because Associated Engineering makes it. In fact, there are very few cars on the road in this country today which are not catered for by this firm.

Since 1949, Associated Engineering, a member of a group which includes Associated Engineering Ltd, England, and Repco Australia Ltd, who probably comprise the largest group of auto part manufacturers in the world, has supplied the majority of the Dominion's requirements of these important components. Intricate plant, much of it designed and made by the Company and its Associates, was installed at Mt. Wellington to meet the production needs of lines to be manufactured, and as time goes by the range of components is being extended.

Piston Rings — Two Methods of Production

A large part of the plant is devoted to the manufacture of piston rings, produced by two methods:—

(1) By parting off from a centrifugally cast cylinder.

(2) From individual castings.

The materials used vary from special unalloyed cast irons to iron alloys containing chromium, vanadium, and molybdenum, to meet various special requirements. To ensure uniformity of the modulus of elasticity and the micro-structure of the material, close control of the metal and foundry practice must be maintained, and, at the foundry, micro-structure, hardness, tensile strength and elasticity are checked continuously.

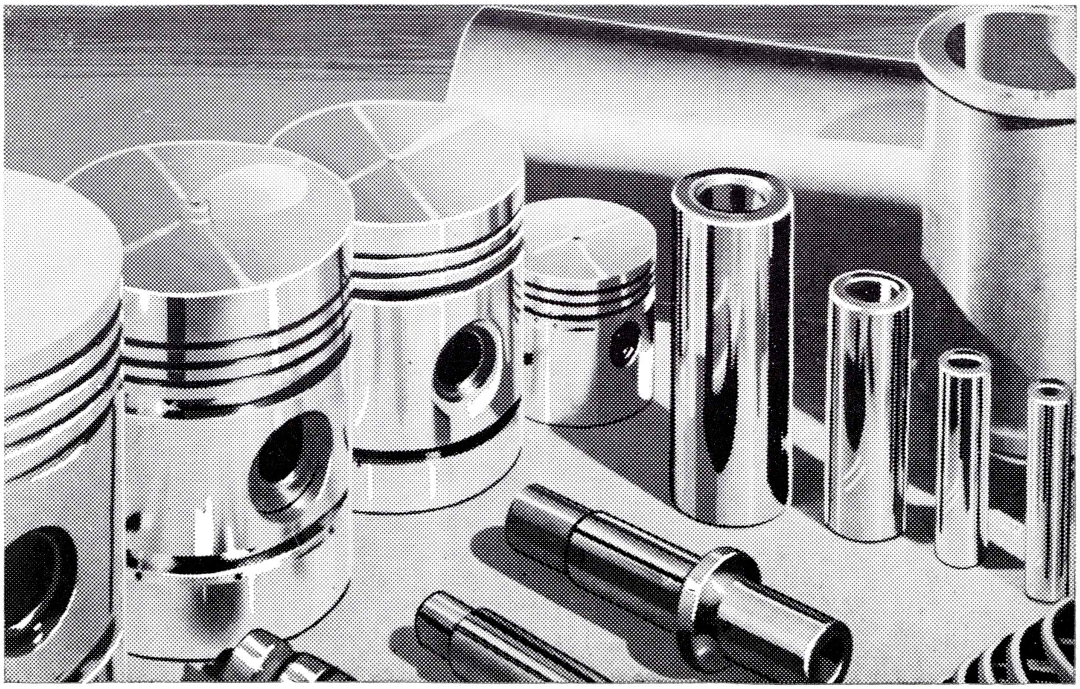
This Ring is Not Circular

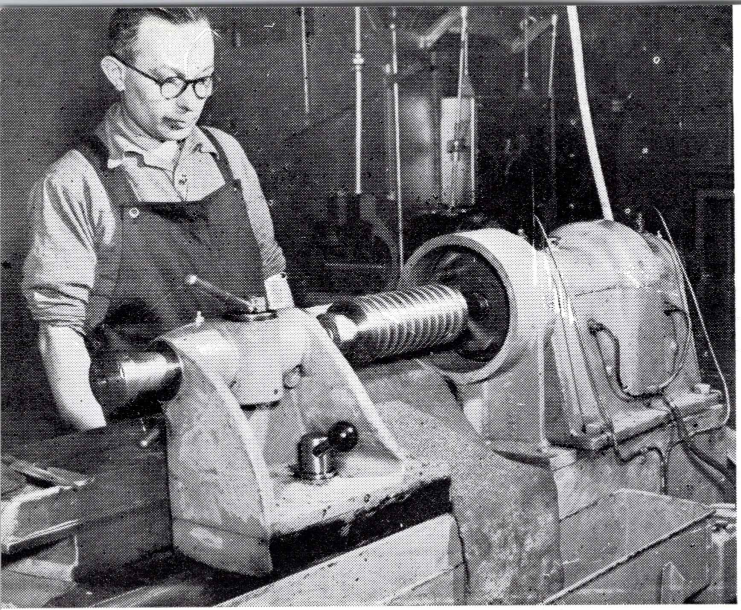
To imagine a piston ring as being circular in shape is wide of the mark, for when closed such a ring would only touch in a few places. It is essential that the ring be a perfect fit, and that the free shape be of a special form, which can be calculated by higher mathematics.

The production of this shape is the essence of piston ring manufacture, and manufacturing techniques and rigid inspection ensure that these requirements are met.

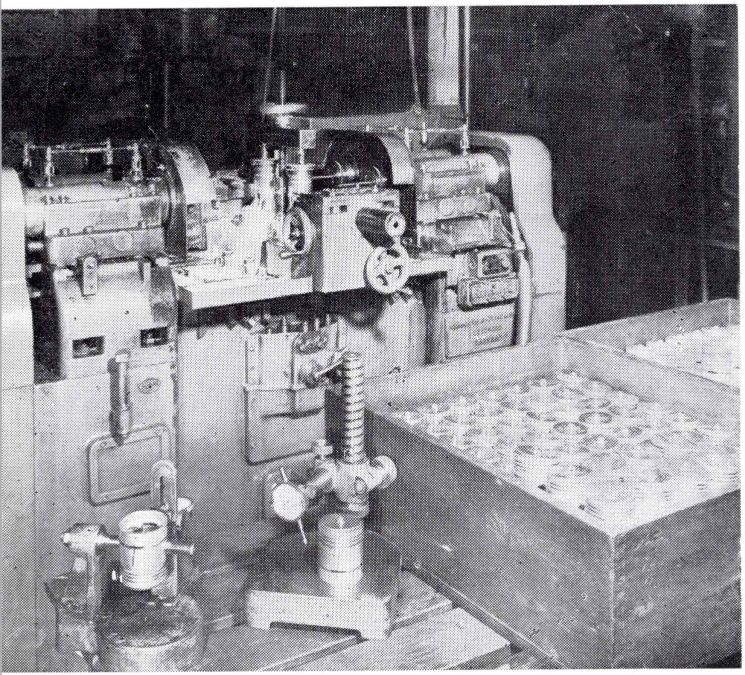
Chromium-plated rings are chiefly used for the top compression ring on each piston, and were originally produced with the

COMPONENT PARTS FOR THE INTERNAL COMBUSTION ENGINE: Associated Engineering (N.Z.) Ltd, a rapidly expanding organisation, produces nearly 2,000,000 piston rings annually for the New Zealand market. The Company has been in production since 1949.



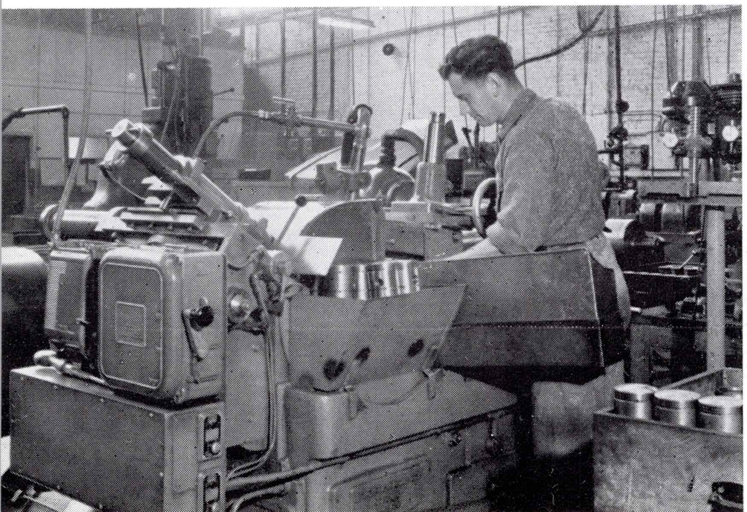


TURNING THE EXTERNAL DIAMETER OF PISTON RINGS.



FINE BORING of gudgeon pin holes in pistons before "accurizing".

FINISH GRINDING RING LANDS.



idea of cutting down ring wear. It has been found, however, that what they actually do is to reduce bore wear and so prolong engine life.

Check and Counter-Check by a Battery of Instruments

Right from the beginning, the emphasis is on precision measurement. At the head of the production line, the men on the lathes which handle the initial turning and grinding are continually checking and counter-checking, and as the rings continue on their course they move through a veritable battery of instruments, chief among which are the dial test indicators, set to reveal the tolerances which become progressively more exacting as the work advances.

The finer "lapping" of the rings is done in a machine which works on the whet-stone, or honing principle. Here the rings are sandwiched between two large, extremely fine lapping stones. These are mounted on discs which rotate in opposite directions to each other, while the rings themselves, nestling in metal holders, oscillate independently. This honing ensures perfect flatness and a high quality surface finish, but here again constant checking of dimensions is necessary to make sure that too much metal is not lost in the process.

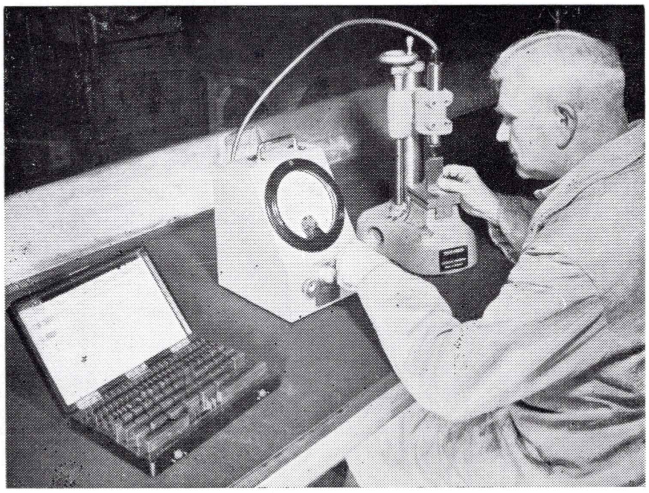
Pressure is Heat Formed into the Ring

The exact degree of pressure which a ring must retain throughout its life involves careful tests also, the pressure being obtained by heat treatment in electric furnaces.

It is about this stage that it is realised that iron, when it is cast to the exacting specifications obtaining in the foundries, is a metal capable of highly-specialised functions involving tremendous stresses.

The final check on the piston rings is a "light test" to determine that the ring will fit the cylinder at every point — a most essential feature. The ring is inserted into a round template

PRECISION GAUGING equipment checking gauge blocks against master gauges.



of cylinder size, and a beam of light is projected on to it. Any leakage of light is magnified on a screen so that the operator can detect a deviation as small as 1/10,000 of an inch.

The Oval and Tapered Piston

Pistons form a major part of the New Zealand production, the majority of the output being pistons of special aluminium alloy. The modern piston seldom has a skirt which is truly circular, the combination of mechanical and thermal stresses set up in service requiring a piston that is oval and tapered.

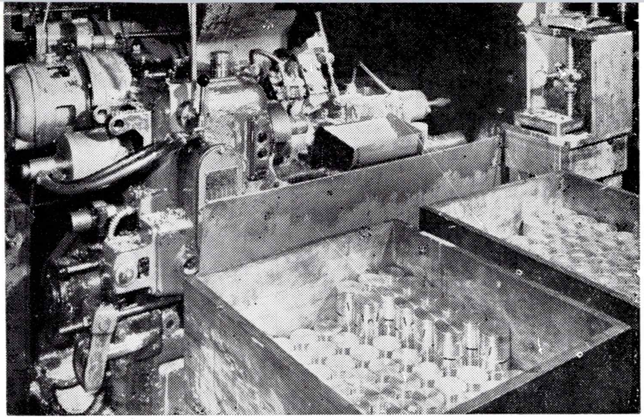
Requirements of each Engine are Different

Each engine designed calls for a piston of slightly different shape. The object to be achieved with each piston is to obtain the greatest possible contact between skirt and cylinder wall, in order to produce maximum heat transfer and the best possible oil control.

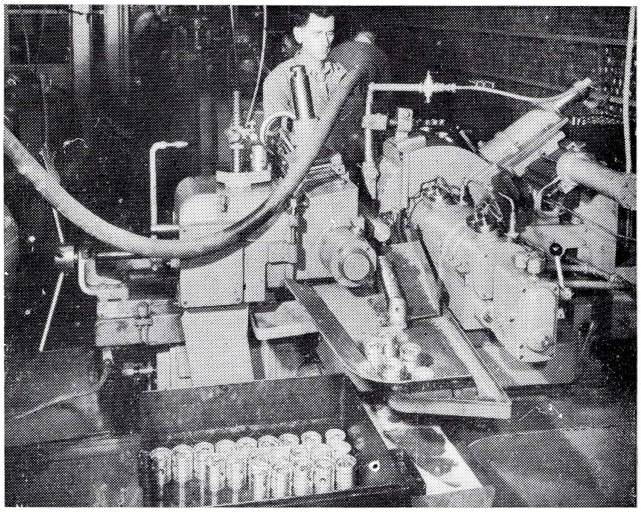
To obtain this desired shape, special piston grinding machines have been developed which will grind pistons to any desired form. Great attention has been paid to the accuracy and finish of piston gudgeon pin holes, and by the process known as "accurizing", which has been specially developed, extremely accurate holes of very high surface finish in the order of 4 to 5 micro-inches are produced.

Blueprint to 3-D

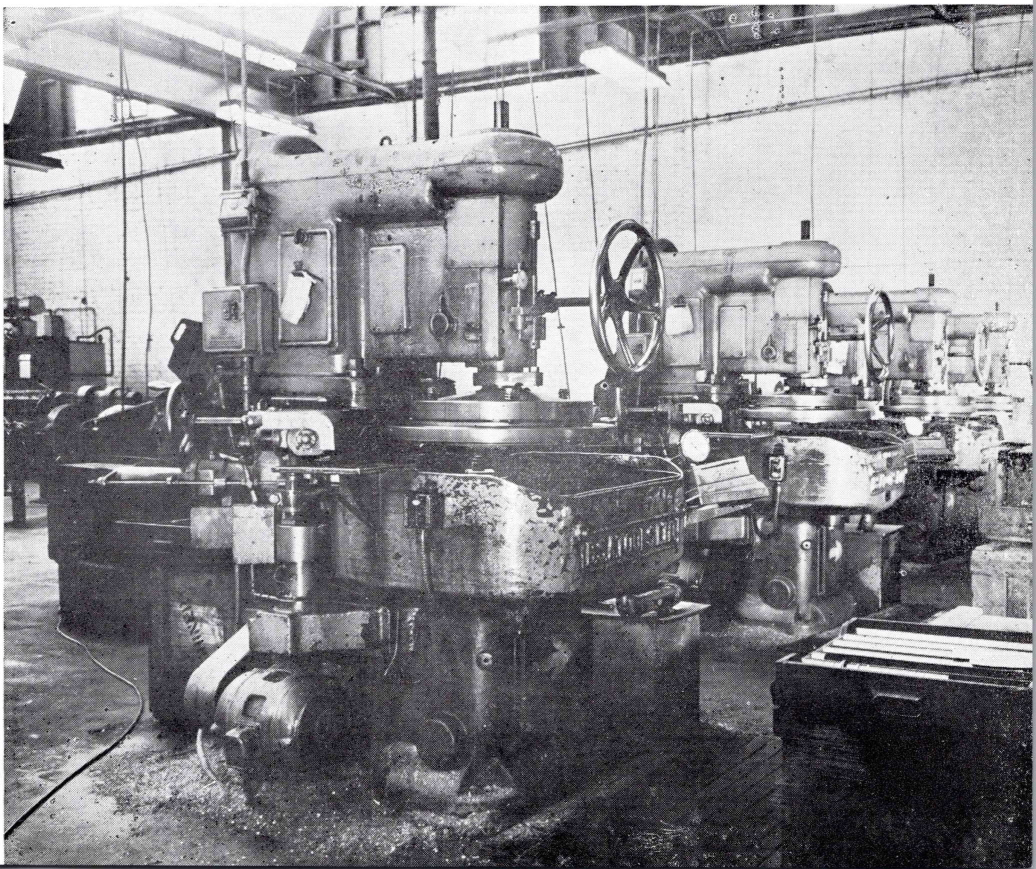
On the production lines, pistons emerge—from the precision-moulded castings from the foundry. As an engineering triumph, a modern piston for an internal combustion engine is no less



AUTOMATIC LATHE turning and grooving pistons.



CENTRELESS GRINDER rough grinding the external diameter of pistons.



THE FINAL GRINDING PROCESS: The battery of honing "lappers", in which piston rings receive their final grinding. Boxes in right foreground contain hundreds of rings awaiting processing.

Photo: Les Downey

remarkable than a suspension bridge. The blueprints which accompany each "run" give an eloquent indication of the complex calculations which the machinist must translate into three dimensions. Lathes and other machinery all have testing equipment as accessories, equipment which is tended constantly by a group of experts checking jigs and fixtures and calibrating gauge blocks with Taylor-Hobson electronic comparatives. Much of their time is spent in setting the dial test gauges.

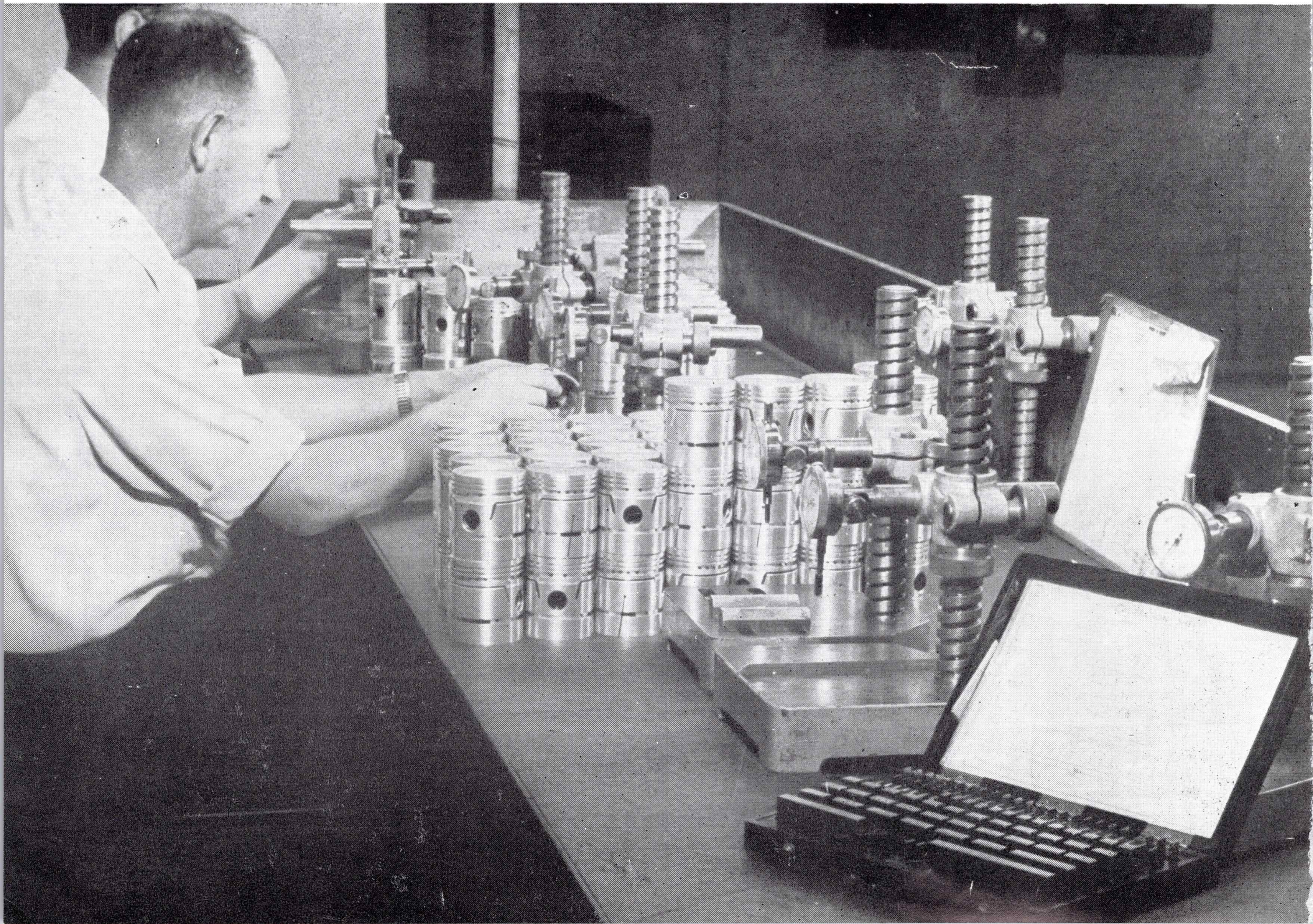
Cylinder Liners

Cylinder liners and kitsets, for which there is an increasing demand for reconditioning modern internal combustion engines, are produced in great quantities annually.

Anything from a Motor-Mower to a Diesel Marine Engine

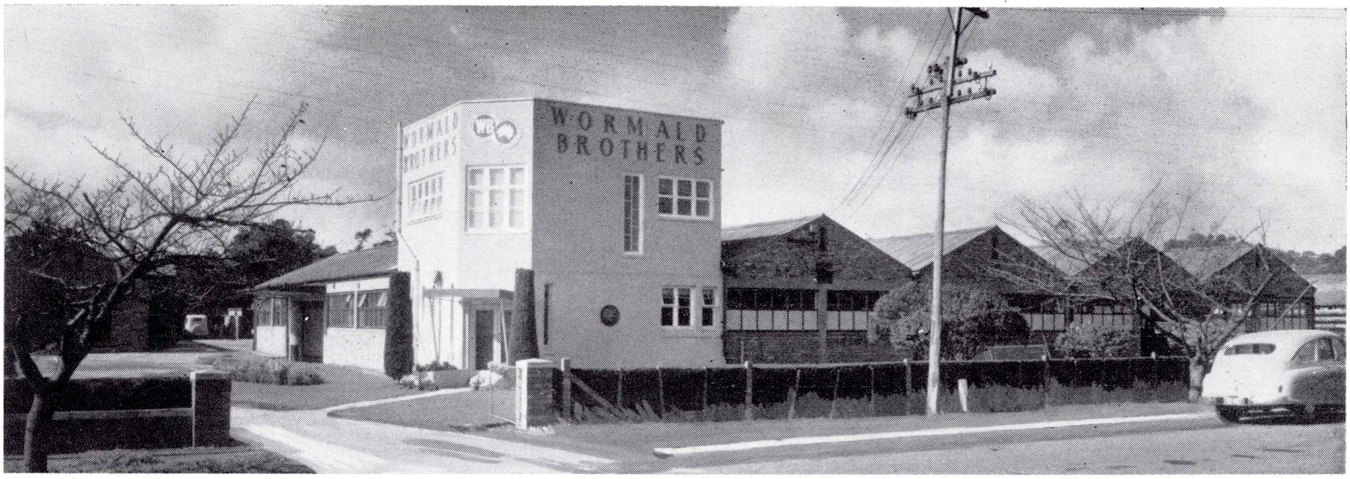
And in the store are stocked the finished product—sizes to fit anything from a motor-mower to a diesel marine engine. That Associated Engineering is able to satisfy a market which is entirely devoted to replacements is a tribute to the high standard achieved and maintained. Year by year, production figures continue to rise, and, at the time of writing, Associated Engineering is pressing on with extensions to the factory.

SPECIAL MACHINE for grinding piston rings on the side before finishing lapping.



PISTONS FACE THE DIAL TEST INDICATOR — THE FINAL TEST. The box of gauge blocks used to set the indicators, which are regularly measured against master blocks which never leave the factory, is seen in foreground.

Photo: Les Downey



PART OF THE AUCKLAND WORKS AND HEAD OFFICE. Wormald Brothers Industries (N.Z.) Limited have their Head Office today at New Lynn, Auckland. A recent extension of 7,000 sq. ft. has just been completed at the right of these buildings which are rapidly covering this 3-acre property.

WORMALD BROTHERS INDUSTRIES

(N.Z.) LTD. Portage Road, New Lynn

The many products and services manufactured and carried out today by Wormald Brothers Industries (N.Z.) Limited have grown far beyond the original aims of the founders of this old established business.

In 1889, when Joseph Wormald and his friend Stanley Russell went out from England to Australia with the agency for a British insurance company, they took with them the newly invented "Grinnell" Automatic Sprinkler System, and their partnership soon developed into a Fire Protection business entirely. A second brother, Mr. H. P. Wormald, joined the business and so the name came into being. It was this same year, 1889, that the "Grinnell" Sprinkler System was installed at the Northern Roller Milling Company's mill in Auckland and, while today it has also spread into larger premises which have grown up around it, this first link with the Wormald Brothers' interests in New Zealand still remains after just on 70 years.

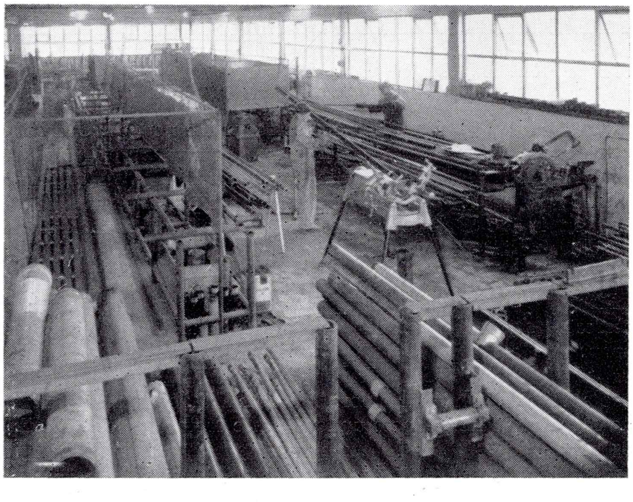
Wormald Brothers Industries (N.Z.) Limited now is a New Zealand public company with a paid capital of £107,000, of which £35,000 is in preference shares owned by the New Zealand public, and is registered on the Stock Exchange. The majority of the ordinary shares are held by Wormald Brothers Industries Limited of Australia, but it is noteworthy that, since the formation of its New Zealand affairs—firstly as a private company and then into a public company, the Australian holding company has reinvested all of its dividends into the New Zealand enterprise.

The business has maintained its leadership in the Fire Protection field but, as this biography will show, it has added many other strings to its bow, and, today, plays a very prominent part in supplying the industrial needs of our country in many spheres. The company is purely a holding one which operates through its various subsidies, and, in summarising them here, a ready indication is given of the widespread activities in which it engages.

The best known, perhaps, is Wormald Brothers (N.Z.) Limited which has the following operating divisions:—Fire Protection Engineering, "Metalbilt", Manufacturing, Electrical, Merchandise, and "Kawneer" Architectural Aluminium. Other subsidiaries are Aluminium Anodisers (N.Z.) Ltd., and Kirsch Company (N.Z.) Ltd. (This latter operates through licenses granted to Johnston Industries Ltd.)

The directors of Wormald Brothers Industries (N.Z.) Limited comprise G. Gordon Russell (Chairman), F. L-G. West, D. H. Steen, and W. Jarvie (General Manager), while the operating companies are directed by Messrs. W. Jarvie, R. J. Fraser (Auckland manager), J. H. Slater (Wellington manager), and N. H. Holland (South Island manager).

The company confined its activities to the "Grinnell" Sprinkler System and its Australian made "Simplex" Fire Extinguisher until 1940, when it commenced its first fabricating plant in rented premises at Newtown, Wellington, and, then, in 1945, opened a branch office in Auckland. This was followed in 1948 and 1949 by the opening of branches in Christchurch and Dunedin respectively. In 1950 it built its own factory and administration offices at Petone, Wellington, where the Head Office was situated until it was transferred to Auck-



A CORNER OF THE AUCKLAND WORKS showing the racks from which the various sized tubes are drawn on to the welding tables forming part of the fabricating of a "Grinnell" Sprinkler System.

land, with the puchase at New Lynn of a large property in Portage Road, in 1954.

The latest indications of the Company's spread are the opening of a fifth branch at Hamilton and the building of a new factory in Portage Road, where the "Metalbilt" Manufacturing Division has been housed.

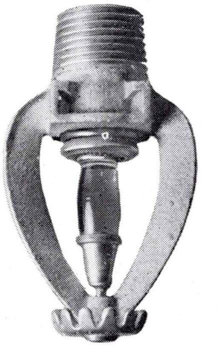
To give a full appreciation of the diversified activities of this engineering business, we shall briefly summarise the various divisions and subsidiaries referred to above.

Fire Protection Engineering

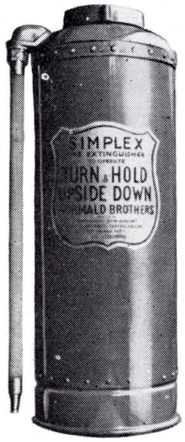
This Division, of course, covers the famous "Grinnell" Sprinkler System and this, along with the various other fixed systems of fire protection which the Company handles, necessitates a large drawing office staffed by technical draughtsmen, under the supervision of a qualified engineer, to survey — design, and, after fabrication in the factory, install the appropriate protection system to the fire risk involved.

The company of Wormald Brothers has been seized from its very commencement with the importance of supervisory service and regular testing of fire protection systems, and the earlier reference to the 70-years-old "Grinnell" installation in Auckland shows the value of such an attitude to the Company's clients.

The actual manufacturing in this Division is largely composed of the fabricating of the fixed pipe work systems. These include—with the Sprinkler Systems—Kidde CO_2 Gas fire extinguishing systems, Mulsifyre High Pressure Water extinguishment of oil and paint fires, etc., National Aer-o-foam system, where big quantities of fire foam are needed, and Protecto-spray systems for lowering the temperature from an adjoining fire of large storage tanks of highly inflammable spirits, or other substances. A further system covered by this Division is the Deluge or Flooding System and, finally, the installing of Fire Hydrants.



The "Grinnell" Automatic Sprinkler Head.



"Simplex" Fire Extinguishers.

"Metalbilt" Division

Here we have a very marked change from the original interests, for, as the company puts it, "Metalbilt provides the means of closing openings". This means more than just doors, for it manufactures Steel Roller Shutters, Rolling Grilles, Fire Doors, Bifold Industrial Doors, Vertical-lift doors, and handles the ingenious Rubba-doors under license from overseas. Should some further or special door prove necessary the Company's qualified engineering staff can readily design it.

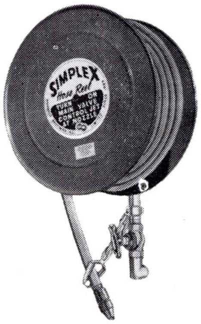
In 1956 Wormalds brought the Rookwood Engineering Company's business, which had been manufacturing steel roller shutters, and this, with the backing of the experience of Australian and English associates, has developed into a very big industry to meet the ever-growing demands of the Dominion's industrial building expansion.

THE FIRE EXTINGUISHER BAY IN THE AUCKLAND FACTORY. This gives a clear picture of the open aisles throughout the works which create full efficiency as well as fire protection orderliness.

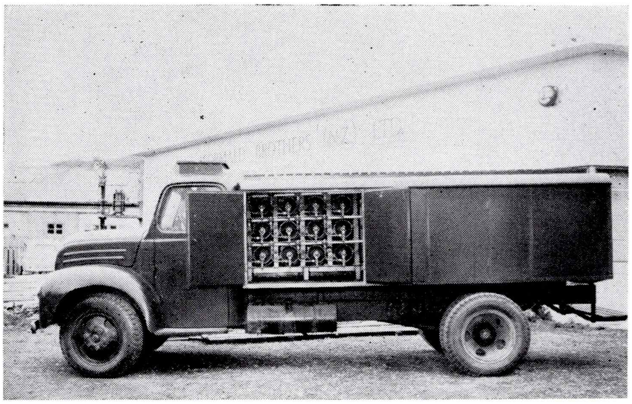
Modern industrial openings require numerous means of closing to provide easy, quick, and space-saving methods best suited to their varying purposes. Metalbilt has, accordingly, developed this Division by applying proper engineering principles in every case. Many of these modern types of doors require very heavy spring balancing and Wormalds manufacture all the springs at the New Lynn factory. A number of the rolling type of doors are electrically operated and engineering of these is dealt with by the Electrical Division.

The architectural profession is showing a very keen interest in the introduction to New Zealand of Rolling Grilles by Wormald Brothers. This door, which originated in Italy, was just spreading to this part of the world when the War came and it lapsed for many years.

Metalbilt Rolling Grilles are made of anodised aluminium rods, with links separating them in various attractive designs, in such a manner that the whole curtain rolls up out of the way on a spring-balanced steel drum. When lowered they can be locked and yet permit vision and ventilation into the area closed off. The anodising, of course, gives protection to the metal and, at the same time, permits a wide variety of most attractive colours. Here again, another Wormald Brothers subsidiary—Aluminium Anodisers (N.Z.) Ltd. — enables the product to be made and finished under the one roof and under constant supervision. This phase is dealt with further on.



FURTHER EXAMPLES of equipment manufactured at the main Auckland factory. These are the intricate pump type of fire extinguisher and the hydraulic Hose Reel.



ONE OF A NUMBER OF SPECIAL CIVIL AVIATION DEPARTMENT AIRFIELD CRASH TENDERS USING CO_2 GAS FOR FIRE FIGHTING, fitted out at the Wellington Works. The design of these tenders was made in conjunction with the Department's Principal Fire Officer.

Electrical Division

This brings us back in some sections to Fire Protection as this Electrical Division has recently designed and now manufactures the "Grenadier" Thermostat Detector and Fire Alarm System. It complies in every way with the Fire Underwriters' requirements and is a high precision system employing the latest electrical developments for this type of equipment.

Automatic electrical fire alarms are today part of a modern multi-storied office building, and it is in keeping with Wormald Brothers' completeness of policy that the Company should cover this field with the same degree of thoroughness and efficiency as is instanced in every section of its activities.

A fully qualified electrical engineering staff is engaged in this work and its knowledge is even more essential in handling the next system to be mentioned under this heading — the "Minerva" Nuclear Fire Detection System.

The "Minerva" System was invented in Switzerland and Wormald Brothers acquired the rights for it in New Zealand and Australia. It is totally new in its conception and truly belongs to this electronic age. "Minerva" is not in competition with the conventional type of thermal detector system, for it has a specialised application where the thermal actuated type would hardly prove adequate. Whereas the conventional detector requires heat to actuate it, the "Minerva" Nuclear Detector is actuated by the products of combustion, such as smoke, but can be adjusted to operate before any visible signs of combustion appear. It is easy to see, therefore, how valuable such sensitivity can be for detecting overloading or other developing faults in vital electronic defence equipment or unattended V.H.F. radio and telephonic stations, etc. Sometimes enormous values are at stake, and great damage can result if fire must grow to big enough proportions before actuating a detector dependent on heat for its operation.

Sometimes, the "Minerva" system is installed in association with Wormald's Kidde CO_2 Gas fire extinguishing system and so, by early detection, it can cause the CO_2 to be discharged to extinguish the incipient fire and, at the same time, automatically switch off all current to prevent a continuance of the electrical cause.

The Electrical Division also deals with the designing and installing of Manual Alarm Systems and with Fire Brigade Alarm Receiving Equipment.

Manufacturing Division

In this Division are a variety of manufactured products other than those already described. Whereas previously the systems and products called for individual design to a large extent (as such is more or less a custom-built line), the Manufacturing Division deals with standard lines of fixed design, such as the "Simplex" Fire Extinguishers, some of which are shown on the previous page. Wormald Brothers have always adopted a principle that top quality is of first importance and so have, from the very beginning, used copper sheet in the manufacture of their "Simplex" Fire Extinguishers. The value of this ideal is shown by the fact that there are many of their early extinguishers still in service today, after 30 years. They have been tested and recharged at regular intervals and still pass the pressure test of 350 lbs. per square inch, required for approval by the Fire Underwriters' Association.

Another very widely used product from this Division is the "Simplex" Hydraulic Hose Reel. As with the other items under the broad heading of Fire Protection, these Hose Reels are fully approved by the Fire Underwriters throughout New Zealand.

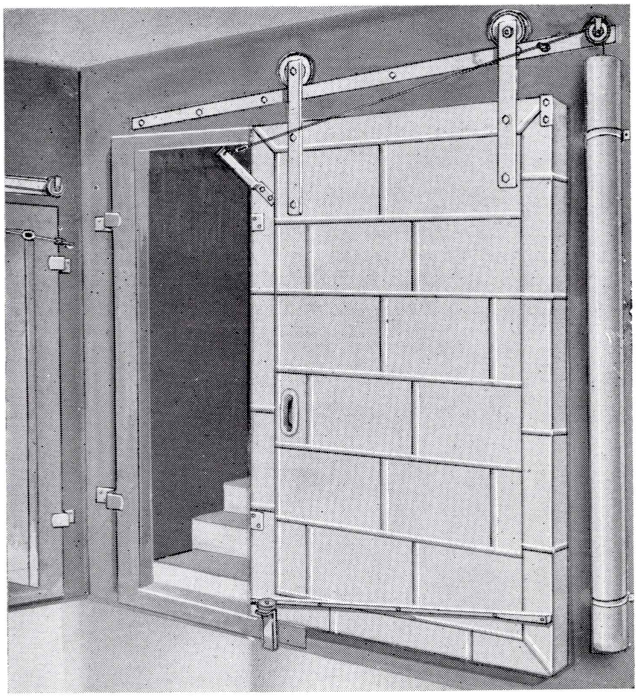
From articles of fire protection and many standard components of various lines handled by the other Divisions, we come to the name "Bangor" which is more than ever filling an important place in the country's home building.

"Bangor" is the registered name for Wormald's track and fittings for different types of sliding doors, and in the Manufacturing Division are made this hardware for cupboard doors, interior domestic sliding doors, and round-the-corner garage doors. These products are packaged for easy stocking and handling by the hardware stores, and the full printed instructions enclosed in the cartons enable the builder or handyman to carry out the fitting of the equipment with ease and efficiency.

"Bangor" equipment has been developed by the Company's overseas associates, with many years of actual experience to assist in arriving at today's very modern design, both in appearance and engineering principle.

Aluminium Anodisers (N.Z.) Ltd.

This is the latest of the Wormald subsidiaries and the name of the Company describes its purpose, although only in a very general sense. As more and more aluminium is being used today in industry and in architecture, there has arisen a need

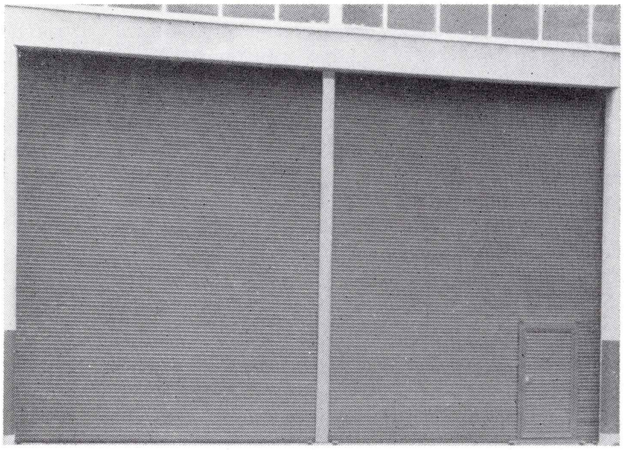


A TYPICAL METALBILT FIRE DOOR which has an approved rating of two hours against continuous heat. These doors are manufactured by the Metalbilt Division of the various Branch factories.

for a high degree of decoration and preservation by the anodising process. This calls for considerable skill to achieve the best results and permanency of colour, but of equal importance is a true understanding of the many aluminium alloys which are produced.

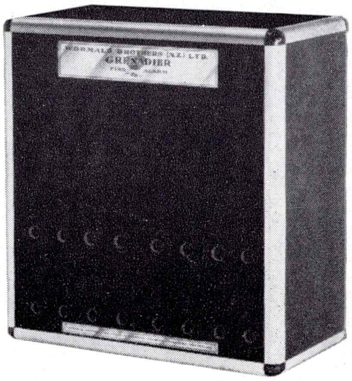
Some disappointment has been felt at times by manufacturers who send out their products to be anodised and coloured and, furthermore, there have been limitations to the sizes which could be handled.

Aluminium Anodisers (N.Z.) Ltd. has installed a plant to overseas standards and is able to offer a full scale anodising and colouring service not previously available. This is of tremendous importance in the developing of the use of aluminium for modern building treatment in architecture. This Company has already been able to satisfy the rigid specification required by the architects for a very large new office building shortly to be commenced, and it is of interest that they had not previously been able to allow for this modern material because of the limitations of available anodising plants.

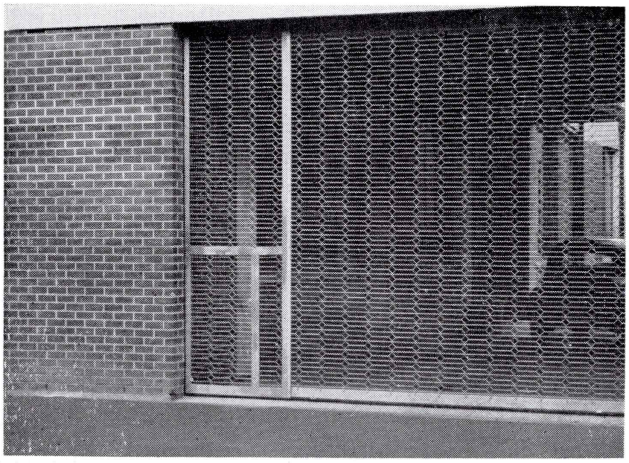


STEEL ROLLER SHUTTER manufacturing forms a part of the new "Metalbilt" Works recently built at the New Lynn factory.

Aluminium Anodisers can provide both anodising and colouring of extrusions up to 19 ft. in length and of sheets up to 9 ft. × 4 ft. 6 ins., while manufactured articles are dealt with in the smaller industrial tanks.



THE "GRENADIER" FIRE ALARM CONTROL PANEL, which was designed along with the thermostatic Detector Head, by the Electrical Division of Wormald Brothers (N.Z.) Limited. This electrical equipment is all fabricated and assembled at the New Lynn factory.



"METALBILT" (ALUMINIUM) ROLLING GRILLES are custom built at the Works at New Lynn, to suit each individual opening.

A highly qualified technical staff is employed by this Company whose manager has had six years of practical anodising experience in this country. In addition, its technical adviser, attached to Wormald Brothers' staff, has had 20 years of aluminium experience with the British Aluminium Company in both metallurgical and surface treatment spheres overseas.

A technical laboratory attached to Aluminium Anodisers' New Lynn plant is used concurrently with all of the processing being carried out, and all work is scientifically tested to ensure its complying with the standards demanded. The British Standards specification is taken as a minimum in all cases, although the ultimate application of some of the alloys treated calls for a higher degree of anodic film.

This Anodising Company will certainly play a big part in the development of aluminium in this country, and it is very ready to give a full technical advisory service to anyone interested.

"Kawneer" Division

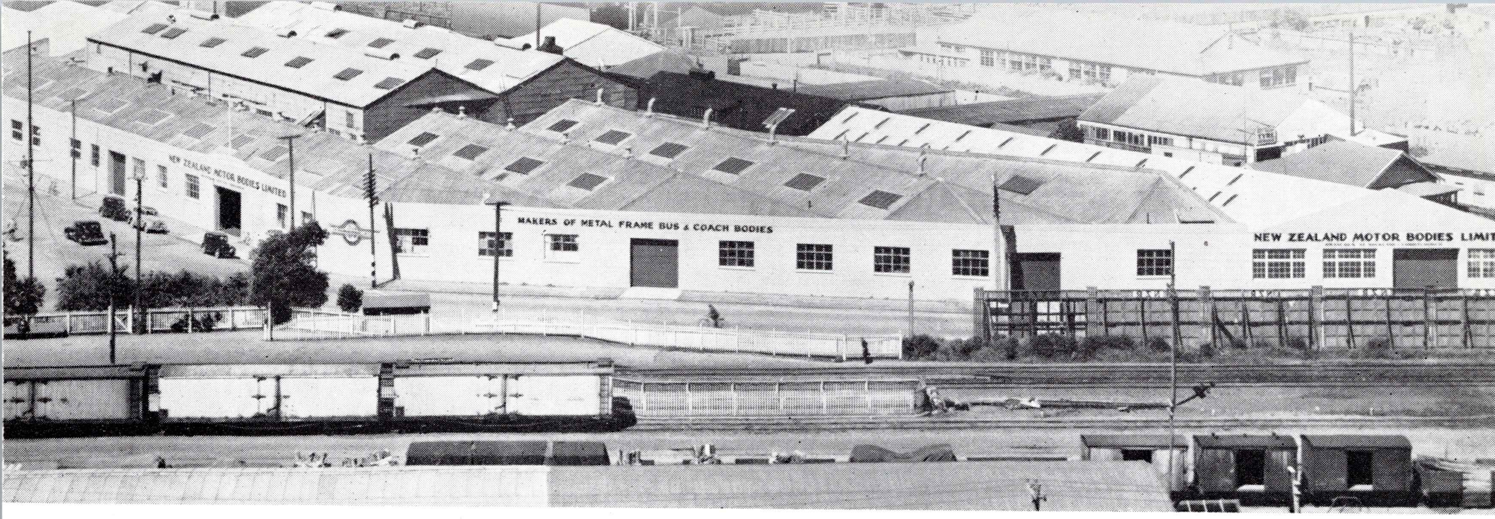
This section of Wormald Brothers Industries is an association of the Kawneer Company of America, with whom Wormalds have developed a major Division in Australia. In New Zealand, the work is being handled by their engineering designers and metallurgical technician, for Kawneer is virtually architectural aluminium design and fabrication.

Kawneer in America has brought sparkle and finesse to over 2,000,000 construction and modernisation of building-front projects and so, with this technical background of experience combined with a close co-operation with the architectural profession in this country, this Division of Wormald Brothers should prove of very great value to the development of modern buildings in line with overseas trends.

Merchandise Division

This section of the Wormald industry, while not on the manufacturing side of this stage of its development, controls, in New Zealand, a number of products made by associated companies overseas. These include the range of "Advance" Gluing and Carton Sealing machines and also certain "Steelbilt" products, such as the Automatic Luggage Lockers supplied to the Railways Department.

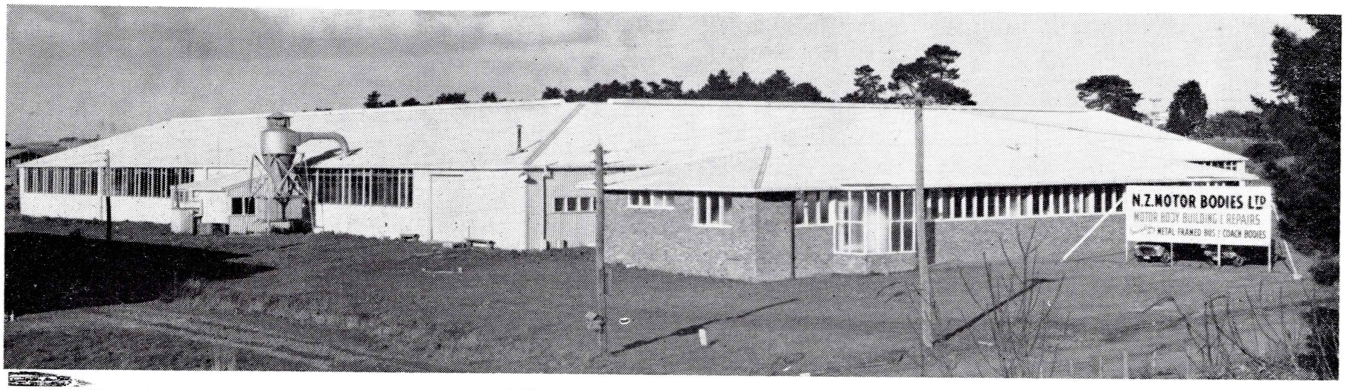
A further product of ingenious design which has created tremendous interest overseas in the field of steel storage and filing equipment is known as "Pivoted Wing". Wormald Brothers have acquired the Australasian-wide licence for this product.


NEW ZEALAND MOTOR BODIES LIMITED
MAKERS OF METAL FRAME BUS & COACH BODIES
NEW ZEALAND MOTOR BODIES LIMIT

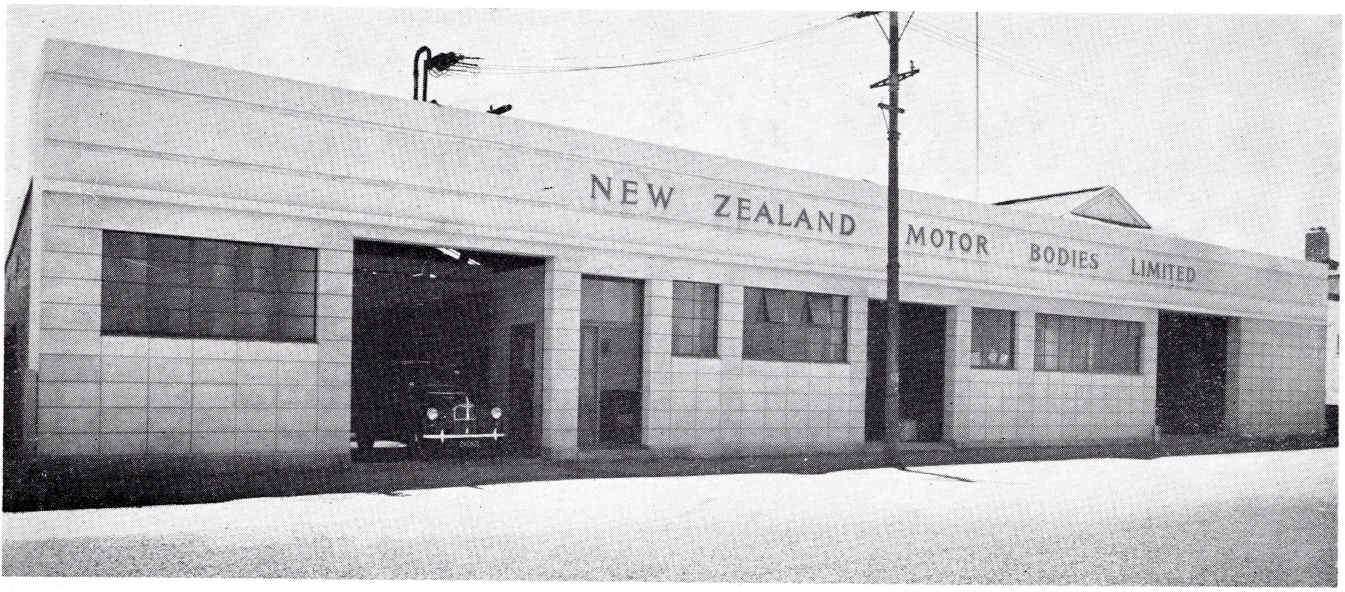
PETONE FACTORY, corner Hutt Road and Jackson Street.

New Zealand's Largest Bus Body Builders

NEW ZEALAND MOTOR BODIES LIMITED


N.Z. MOTOR BODIES LTD
MOTOR BODY BUILDING & REPAIRS
METAL FRAMED BUS & COACH BODIES

AUCKLAND FACTORY, Monahan Road, Mt. Wellington.


NEW ZEALAND MOTOR BODIES LIMITED

CHRISTCHURCH FACTORY, 99-105 Ferry Road.

This Company, although it was not then known by its present name, was established at Petone in 1926 as a concern catering for the building of all types of special car, commercial and passenger service bodies. It was not until early in 1937 that the business was taken over by New Zealand Motor Bodies Limited.

In March, 1938, production was commenced of all-steel truck cabs — the first to be made in this country. All parts were pressed from sheet steel, some thousands of pounds worth of dies being specially made by the Company for this purpose. During peak production, 15 complete cabs per day were built, and the plant established and experience gained in all-metal body construction were put to good purpose during World War II when bodies for 2500 Army and Air Force vehicles were built.

Policy for the future is decided

During the war, new policies for future development were formulated. Omnibus and coach services in New Zealand had grown steadily and up to the outbreak of war there had been an increasing demand for new vehicles. At this time bodies were all of wooden construction requiring skilled workers in every department, and delivery was not rapid enough to meet requirements. Few new vehicles were put into service during the war period and the directors of N.Z.M.B. decided to specialise in omnibus and coach body construction to cater for the demand due to the large backlog of replacements and the rapid growth of the Services.

Overseas there had been a steady development in the use of metal for the construction of omnibus and coach bodies, and a decision of far-reaching importance was made to develop an all-metal body for New Zealand conditions. This type of construction, besides providing a much higher safety factor for passengers, lends itself more to standardised quantity production and the use of semi-skilled labour in assembly.

Metal-framed bus bodies

Metal-framed bus bodies had never previously been made in New Zealand, and every part of the job had to be thought out without any precedent as a guide. Standardised metal sections for the various components of the framework had to be designed and the necessary tools made for their manufacture. Methods of assembly had to be devised and assembly jigs designed and constructed.

N.Z.M.B. designers and engineers were equal to the task and towards the end of 1944 the first N.Z.M.B. 'Steelbilt' bus bodies were put into service by N.Z.R. Road Services, whose executives had shown initiative and enterprise in placing the initial orders for metal-framed bodies for their vehicles.

Welding is used exclusively in the assembly of the framework and, although at that time there was little evidence of its use overseas, it is interesting to note that welding is now extensively used in assembling bus frames in U.S.A., Australia and Europe.

A Notable "first" for the Company

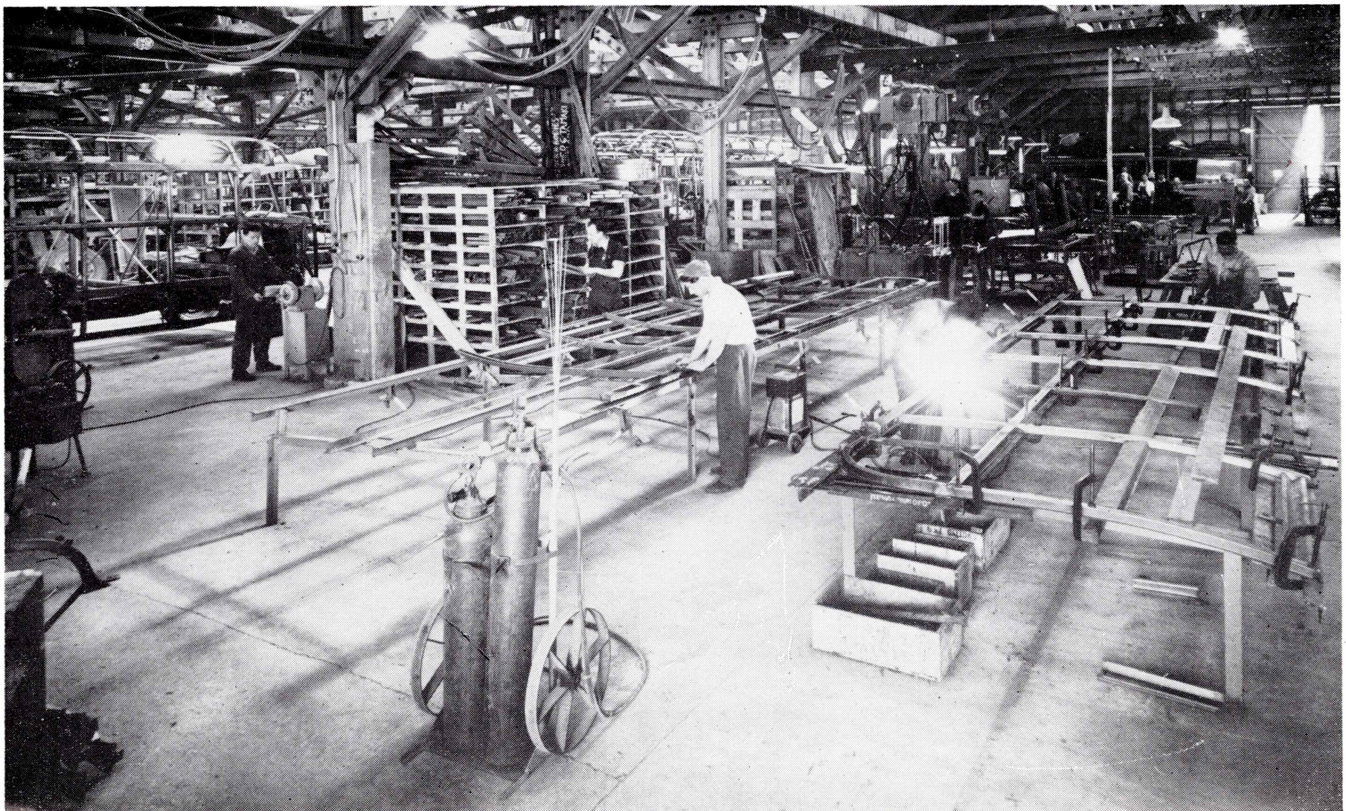
The earlier bodies were rigidly mounted on the chassis, but in 1947 a special flexible rubber mounting was designed and patented by the Company. These rubber mountings minimise the transmission of vibration from the chassis to the body, improve the riding comfort of the vehicle and give longer life to the body.

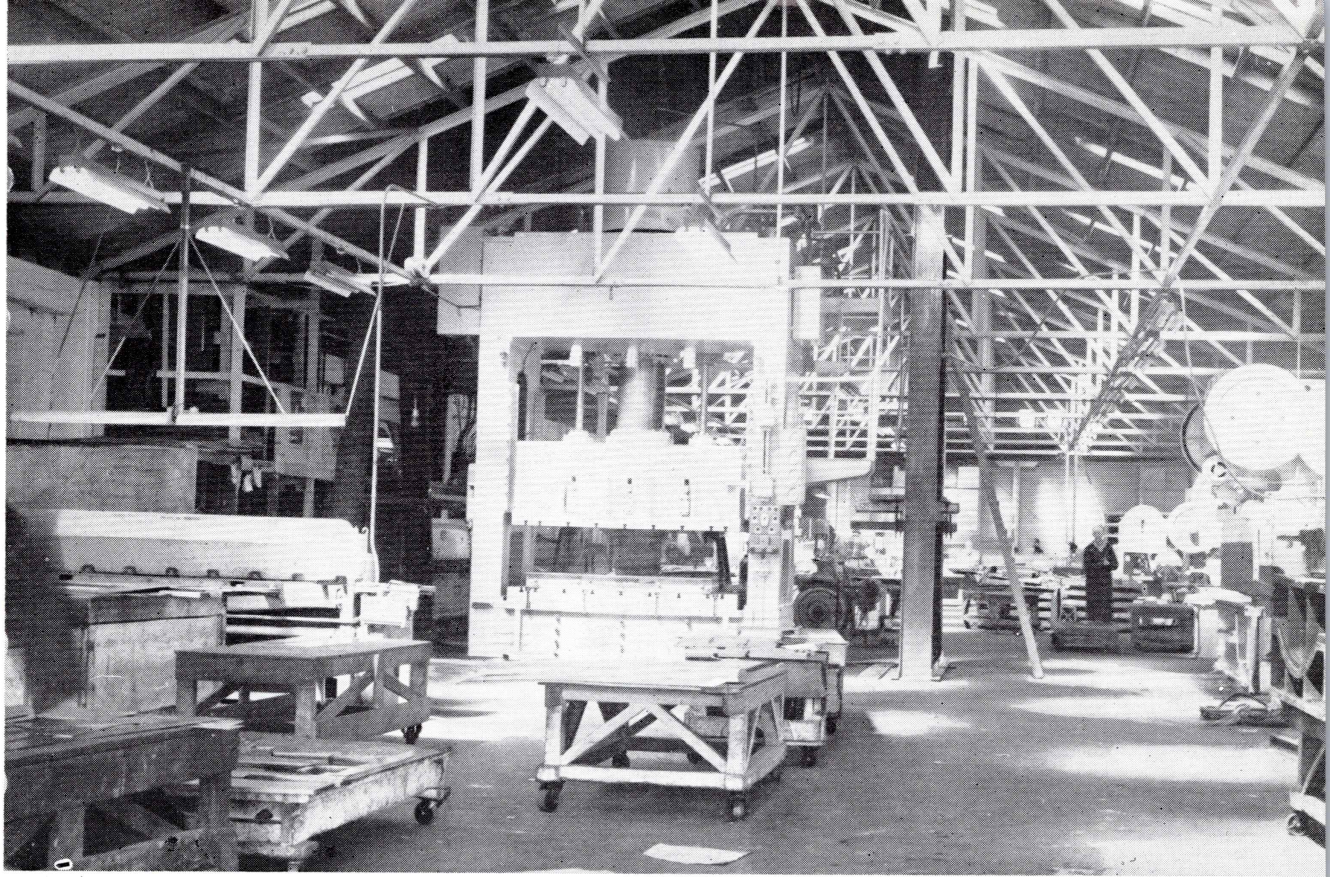
The demand for N.Z.M.B. metal-framed bus bodies rapidly increased, and, early in 1946, a factory was established at Christchurch to assemble the bodies for the South Island. This was soon found to be inadequate and towards the end of 1946 the old-established body building business of Stevens and Sons Limited in Ferry Road was purchased. This factory has since been extended and modernised, and covers an area of 30,000 square feet.

Modern factory at Mt. Wellington

It was found later that the Petone factory could not cope with the assembly of all requirements for the North Island,

THE SHEETMETAL ASSEMBLY DEPARTMENT in the factory at Petone.
Photo: Sparrow Industrial Pictures Ltd.





400-TON HYDRAULIC PRESS in the Manufacturing Department, Petone.

and, in 1948, a factory was established at Panmure for the assembly of bodies for the Auckland area. Later, a block of five acres of land was purchased at Mount Wellington and a new factory was completed on this site towards the end of 1957. This is the most modern body building factory in New Zealand and the factory and administration blocks cover an area of 45,000 square feet.

Extensive additions have been made at Petone since the war, and the factory now covers an area of 80,000 square feet. Here are located, in addition to the usual Assembly and Finishing Departments, well equipped Drawing Offices, Machine Shop and Toolroom, and a large Manufacturing Department which caters for the manufacture of all parts for the three factories. Plant in the Manufacturing Department includes guillotines to cut up to ¼in. plate, large power benders, geared presses, and a high speed 400-ton hydraulic panel press. Parts for the branch factories are shipped C.K.D., these factories having their own assembly jigs and complete facilities for the manufacture of seats, painting and finishing.

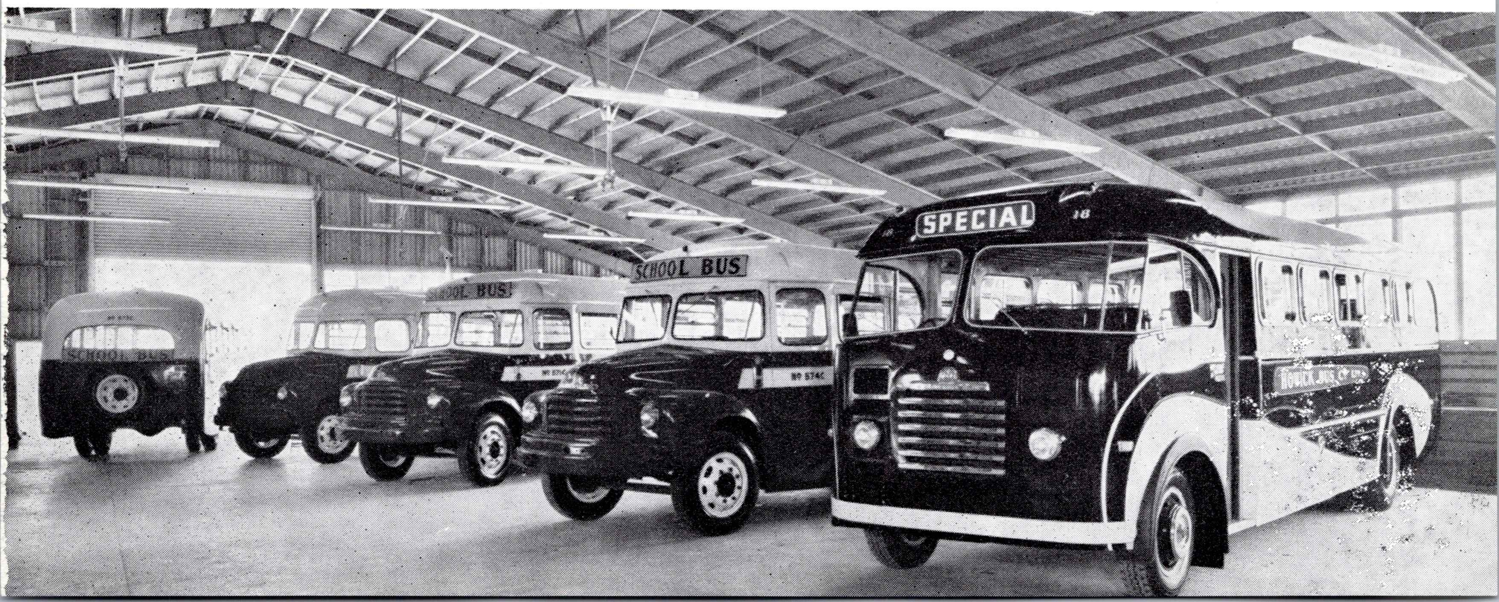
Applications for aluminium alloys

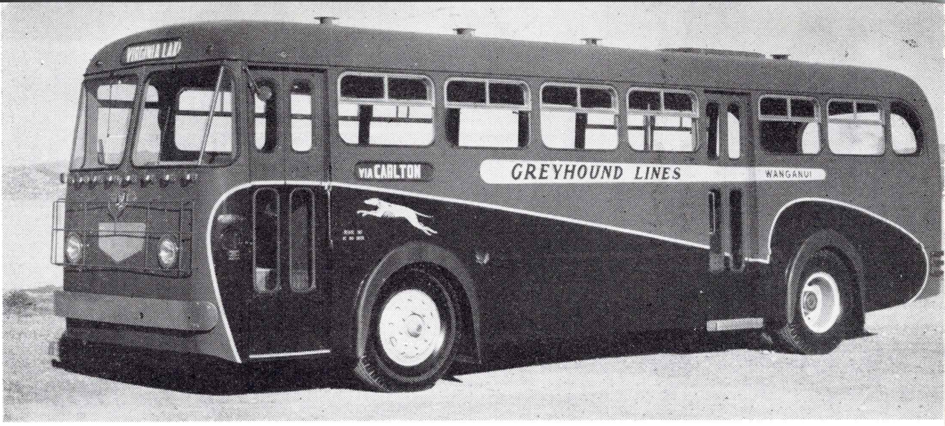
Aluminium alloy sheet has been used for some time for panelling, step wells and interior finishing, and a recent development has been the use of reinforced fibreglass plastic for header and rear dome panels and for interior finishings. If required for special applications, aluminium alloy extrusions are used for structural members.

The Company specialises in public passenger service vehicle bodies of all types — omnibus and trolley bus bodies, coach bodies for long distance services, school bus bodies, etc. In addition, the Company manufactures standardised commercial vehicle bodies for which its plant is well suited, and at Auckland has a separate division for body repairs.

(Continued next page)

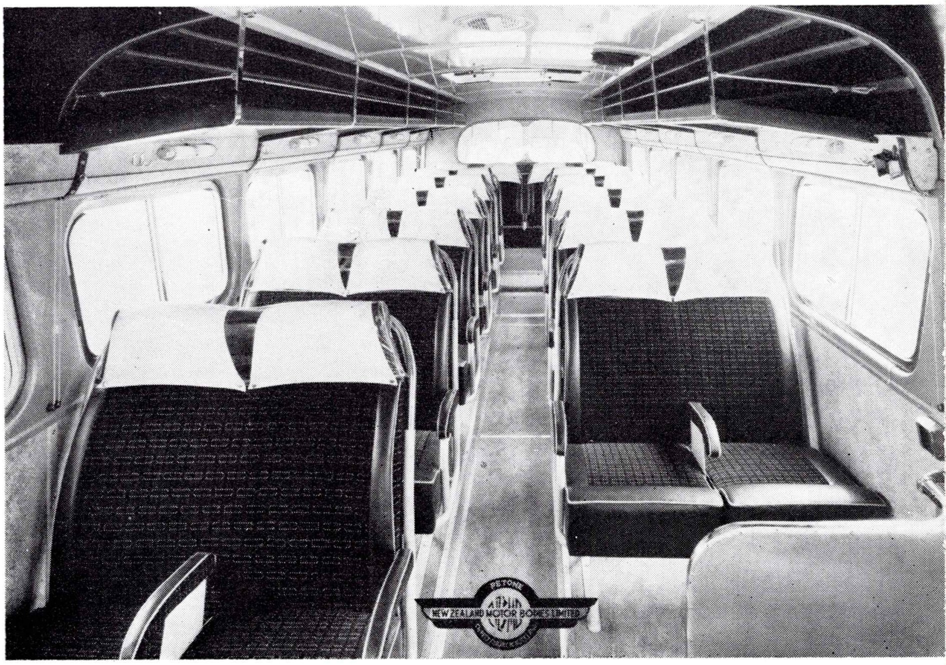
BUSES READY FOR DELIVERY at the Auckland branch of the firm.





A GREYHOUND TIGER CUB 37-passenger omnibus made by New Zealand Motor Bodies Limited. Photo: K. E. Niven L

MODERN STYLING AND COMFORT for passengers on New Zealand roads. Photo: Sparrow Industrial Pictures Ltd.



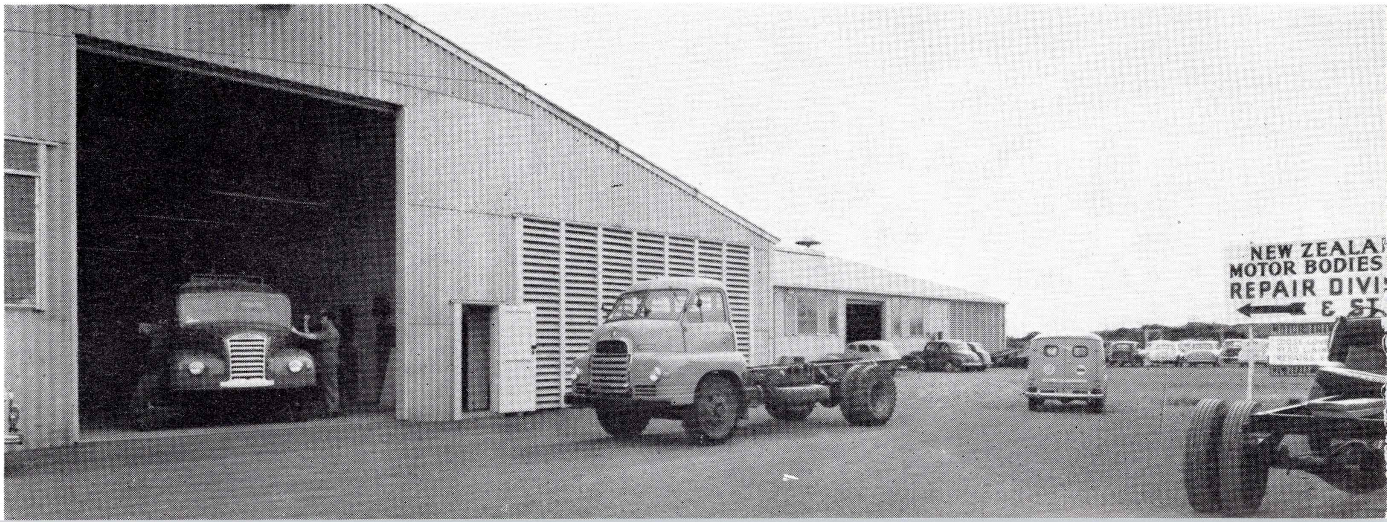
The guiding motto of N.Z.M.B. Ltd. has been, 'Adapt, Adopt, Improve'. The business has been adapted to meet changing conditions and the development of road passenger transportation in New Zealand; new methods of design and construction have been adopted to ensure that N.Z.M.B. bodies are most suitable for New Zealand conditions, and in keeping with the latest developments overseas; every effort has been made to improve and expand the business to give maximum service to customers.

With its three factories, New Zealand Motor Bodies Ltd. has 155,000 square feet of floor space, 250 employees and an overall productive capacity of 200 bus and coach bodies a year.

An important factor in N.Z.M.B.'s progress has been the friendly relations which have always existed between management and staff. Each factory has its own Social Club, which is active in canteen management, social functions, and sports activities. The executive of the Social Club cooperates with the management on all matters of staff welfare and administers a Benevolent Fund for the benefit of employees needing assistance, and a Sickness Benefit Scheme. There is keen competition for the 'MOBO' Rugby Football Cup, which is competed for annually between teams from each factory. These visits give representative groups opportunities to see the other factories, exchange notes and get to know each other. A Staff Pension Scheme available to all executives and to all factory employees with over tion for a number of years.

Although, perhaps, not generally acknowledged until more recent times, the human factor — men, what they do, how they work, and the spirit in which they work — is by far the most important factor in any business. Management can supply the necessary buildings, plant and facilities for production, but nothing can be achieved without men to do the job. In such a young country, the progress which has been made in industry in New Zealand is a tribute to the enterprise of New Zealanders, and the achievements of New Zealand Motor Bodies Limited afford an excellent example of the skill, ingenuity and adaptability of New Zealand workers — executives and craftsmen.

THE REPAIR DIVISION of the Company's factory at Panmure. Photo: Sparrow Industrial Pictures Ltd.



The History of Lead

N.Z. LEAD WORKS LTD

Eden Street, Newmarket

N.Z. LEAD WORKS LTD
NEW ZEALAND LEAD WORKS LTD
NZLW

Lead is one of the oldest metals known to man and many of its modern uses have persisted through centuries. The earliest known specimen of lead, dating from 3000 B.C., is a figure found at the Dardanelles on the site of an ancient city called Abydos. The heavy grey metal was evidently well known in Biblical times for it is mentioned in Exodus and several other places in the Old Testament. Old lead pipes have also been found in Egypt. The Assyrians had many uses for lead, and the hanging gardens of Babylon were floored with sheets of lead soldered together to retain the moisture which the vegetation demanded. Babylonians also used lead for caulking purposes and to fasten iron bolts in the masonry of bridges, dams, and other stone structures, much as it is used today.

The ancient Chaldeans of Persia were well acquainted with lead. In 2000 B.C. the Chinese made their first money of lead. In ancient Greece and Rome bronze coinage contained from 3 to 30 per cent lead.

One of the most important historical applications of lead was its general use for water pipes by the Roman people. Many of these pipes, in almost perfect states of preservation, have been dug up in recent years in the ruins of Pompeii and Rome, and in England. Roman public baths were often completely lined with sheets of lead.

From Mine to Ingot

The world produces and uses close to 2,000,000 tons of lead in a single year. The United States is the principal lead producing country. Mexico normally ranks second in world lead mine production, followed by Australia and Canada. Peru, Yugoslavia, Germany, French Morocco, Italy, Southwest Africa, Spain and many other countries are also important producers.

Lead occurs in nature usually associated with other metals, notably silver and zinc. Although many minerals containing lead are known, the most important by far is galena (lead sulphide), an easily recognized, brightly metallic mineral.

To concentrate the lead ore it is crushed extremely fine, sometimes to particles less than 1mm. in diameter, and treated by one of the modern processes of mineral concentration. The remarkable flotation process may be used.

Smelting the concentrates

Lead concentrates when they leave the mill contain 40 per cent and upwards of lead. Smelting is a continuous operation generally conducted in blast furnaces. The blast furnace is then tapped so that the lead flows off into kettles or moulds.

Refining process

The most widely used refining process is the Parkes process. By this treatment the lead is first melted and allowed to cool below the freezing point of copper, which crystallizes and is removed by skimming. It then passes to a reverberatory or softening furnace where the temperature is raised and the molten lead stirred. A blast of air oxidizes any antimony or arsenic present, both of which impurities harden lead (hence the term "softening" furnace), and these oxides are skinned off.

Lead in modern living

The applications of lead are so broad throughout industry that no review of them can hope to be complete. It has become an important factor in our modern way of life. It is used for storage batteries of all descriptions, for cable covering, for building purposes including chemical construction, for solders, red lead, white lead, bearing metals, type metals, ammunition, for protection in various forms against dangerous radiation, and many other uses.

In building construction lead has its part in the plumbing and water distribution systems. Sheet lead is used for roofing, flashing and other waterproofing on many structures.

The foregoing is in no sense complete, but may give some idea of lead's wide range of usefulness and how many of our modern conveniences and necessities would be lacking without lead.

New Zealand uses some 4000 tons of lead annually. The ingot lead comes from Broken Hill, Australia, and is considered one of the finest quality leads in the world.

Forms and fabricating processes

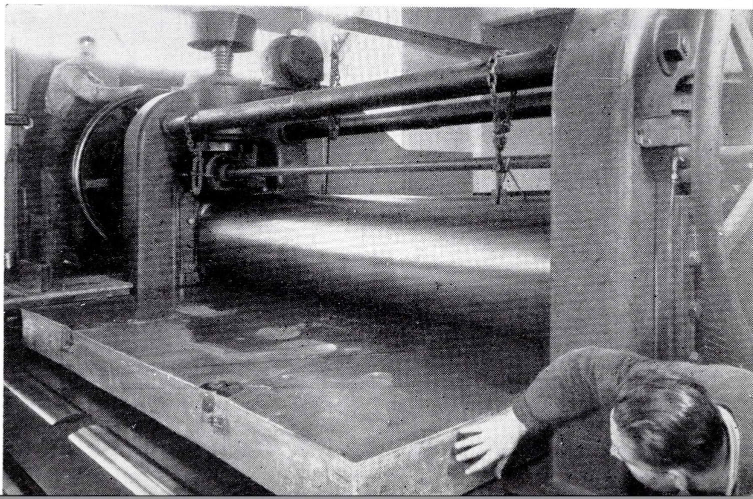
Lead and its alloys can be fabricated by almost all commercial processes. It can, for instance, be extruded, drawn, rolled, cast, stamped, spun, and can be applied as a coating to other metals either by hot-dipping, electroplating or spraying.

Lead and most of its alloys may readily be fabricated by the extrusion process. This process is used to make seamless lead pipe which can thus be produced in continuous pieces of considerable length. Hydraulic presses exerting pressures up to 45,000 lb. per sq. in. are employed for this purpose, the pressure depending upon the cross-section of the product extruded and the metal or alloy used.

Lead pipe, because of its corrosion resistance and flexibility, finds countless uses, the principal ones being in the chemical industries and plumbing and water distribution.

Among the most generally useful lead and lead-alloy products are those produced by cold rolling. These may range in thickness from foil only 0.00035 in. thick to sheets 2 in. thick or more, and may be rolled to any desired thickness. Sheet lead weighs approximately 1 lb. per sq. ft. for each 1/64 in. of thickness. Thus, 4-lb. sheet lead, as it is termed commercially, is 1/16 in. thick, 8-lb. sheet lead is ⅛ in. thick. The machinery and equipment in general use for the rolling of sheet lead consists essentially of a kettle, slab casting pan, rolling mill and roller table.

Rolling mills used for the production of sheet lead are of the reversible type having either a single-roll or double-roll drive. The rolls are mounted one above the other. The lower roll has a fixed elevation while the upper can be raised or lowered several inches to accommodate the thickness of full slabs. The slab of lead is passed back and forth between the rolls reducing the clearance after each pass until the proper thickness is reached, as shown in photograph below.



Hardware lines in polythene wrappings from

WHITE

Photo: Capitol Studios

The gardener or farmer who sprays his crops, the housewife who opens a drawer or cupboard, that "oddity" the tidy husband who neatly arranges the towel on its rail (and even puts the top on the toothpaste?) . . . and an endless list of others. All, without realising it, have one thing in common — a link with a neat modern factory in Mt. Roskill.

It is the Frost Road home of White Star Products Ltd, brass finishers and manufacturers, whose products range from agricultural and garden pumps and sprays to drawer and cupboard handles, coat hangers and towel rails — products used in thousands of homes and businesses throughout New Zealand.

None of them are world-shattering products; mainly, they are simple things whose value is never missed until they are not there. But in producing them in this country, White Star Products Ltd, like many other manufacturers, is helping to make New Zealand more self-supporting and meeting — and beating—overseas competition into the bargain.

The Company is doing it by fully guaranteeing all its products, by maintaining the quality that has won for such White Star products as "Fynspray" pumps a high reputation throughout the country, by using the latest production and packaging techniques and, perhaps most important of all, by encouraging among the factory staff a homely, friendly spirit and a family-like pride in a job well done.

Management and staff

This lively Mt. Roskill Company was founded in March, 1942, by Mr E. L. Hardman and Mr T. R. Holdsworth. It continued to operate as a partnership until December, 1946, when a company was formed.

Mr Hardman is in charge of the production side and Mr Holdsworth, managerial and sales.

To begin with the partners had the assistance of one other employee — today there is a staff of 26. In addition, a large part of the firm's manufacturing is sub-let to other firms specialising in similar lines.

Many of the present staff have been associated with Mr Holdsworth for the last 20 years, having been apprenticed to the company he was managing when he first entered this class of business.

The Company prides itself on the fact that it has little changeover of staff. There is a superannuation scheme and an annual bonus payment for the staff.

Three main products

The Company's products come chiefly under three headings — agricultural equipment, pumps and builders' hardware.

About 40 per cent of the company's output comprises agricultural equipment, the lines including dairy machinery and tractor units used in weed-killing.

A further 40 per cent of the Company's production comes under the heading of pumps. All these are marketed under the Company's own brand, "Fynspray", and include a complete range of household and garden spray pumps, knapsacks and gear pumps. The gear pumps have a wide variety of uses, including boat work and for circulating all classes of liquids.

The remaining 20 per cent of the Company's output is builders' hardware and general lines, including towel rails, drawer pulls, hat and coat hooks, and cupboard catches. All lines are manufactured under guarantee.

Fully automatic machines keep production costs down

In order to keep up with overseas competition the Company has endeavoured at all times to keep its plant up to the highest possible standard, and has, wherever possible, installed fully automatic machinery so as to ensure the lowest possible production costs.

a modern factory

STAR PRODUCTS LTD, Frost Road, Mount Roskill, Auckland

The illustration below is of a fully automatic Brown & Ward single spindle lathe with pneumatic bar feed. The capacity is 1⅜in. in rounds and 1¼in. in hexagon.

It is ideal for runs of from 2000 to 10,000 lots because of the exceptionally short time required in setting up, most jobs taking very little more time to set up than an ordinary turret lathe. Production time on the average four- or five-operation job is 15 to 20 seconds. It is believed to be the only machine of its type in New Zealand.

In addition, the Company has another fully automatic lathe made in Germany. This is a smaller machine with a very high rate of production, and possibly its greatest feature is the speed with which the machine can be set up. It is suitable for work from round bar up to 1in. in diameter and up to 15/16in. across the flats in hexagon.

Another new machine from England is a Churchill Cleaveland hobbing machine for cutting the gears used in the pumps which the Company manufactures.

Dominion-wide representation

The marketing of all lines is through wholesale channels, and the business is represented in every town in New Zealand, with over 600 firms actively selling the Company's lines.

While the Company markets its lines direct to the wholesaler, it is ably represented by Messrs. H. M. Fogarty and Co. Ltd as sales representatives.

A new departure in the marketing field in New Zealand is the packing of hardware lines in polythene wrappings, White Star Products Ltd being the first to introduce this method.

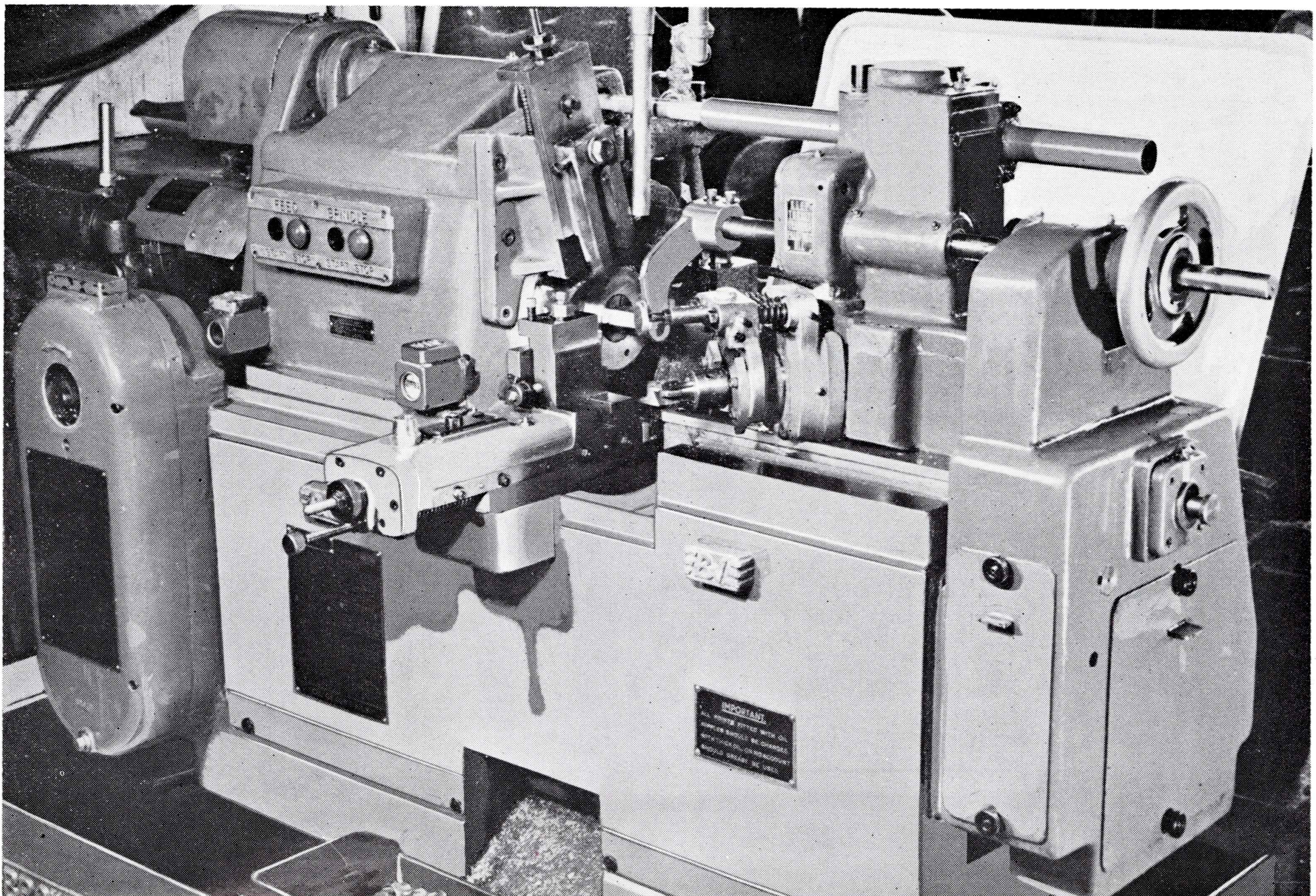
Demand for the Company's lines is particularly good and the factory has been working overtime ever since the business first started.

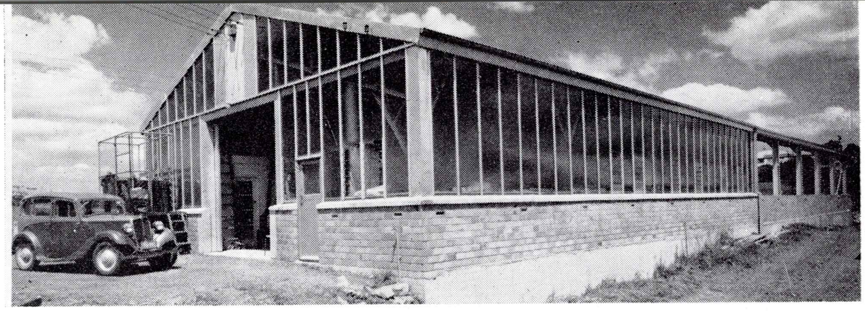
A strong demand means continued expansion

The growth and demand for the Company's lines has in the past always been beyond the productive capacity of the factory and, although the production during the past year was increased by over 50 per cent, there was unfortunately, because of the ever-increasing demand for the Company's products, some delay in supplying orders, but, with the increased plant and the recent extension to the factory and with further extension in view, it is confidently expected that the shortages will soon be overcome and that delivery time will be much quicker.

Whatever the future holds, the Company is confident that by producing a quality article at a competitive price there is a future for its products. In the past it has steadily increased its production without protection from overseas products and it is sure that it can continue to do so in the future.

Photo: Capitol Studios





Television in New Zealand!

MACHINERY MAINTENANCE LIMITED

186 Stoddard Road, Auckland

Machinery Maintenance Ltd. has been vitally connected with the development, production of components and construction of the two private television transmitters in Auckland.

Founded in May, 1947, as a result of a partnership of E. R. McNamara and J. W. Lewis, this Company, with premises of 400 sq. ft. situated at Parnell, was then primarily concerned with the maintenance of factory machinery and, later, tool and die-making. Notwithstanding the fact that they were understaffed, under-equipped and short of capital, these two men were able to forge ahead, duplicating overseas machines—then not procurable—particularly for the boot and shoe and plastics industries.

Essentially a jobbing concern, resourcefulness on the part of the partners allowed them to undertake successfully any job that came their way, either welding, turning, sheetmetal work, or tool making. To this end, they began to employ men capable of a variety of jobs to meet the growth of their industry. This was in 1950 and it was in that year that the Company became associated with Bell Radio-Television Corp. Ltd., of Auckland, and thus branched out into the radio metalwork manufacturing field. Since then production in this field has grown considerably and the Company now handles work for almost every radio manufacturer in and about Auckland.

At the present time, the Company is engaged in the manufacture of metal office furniture and fitments as an auxiliary to the press shop activities. There is a reasonably well-equipped die-making shop and six full-time tool makers are employed in this section.

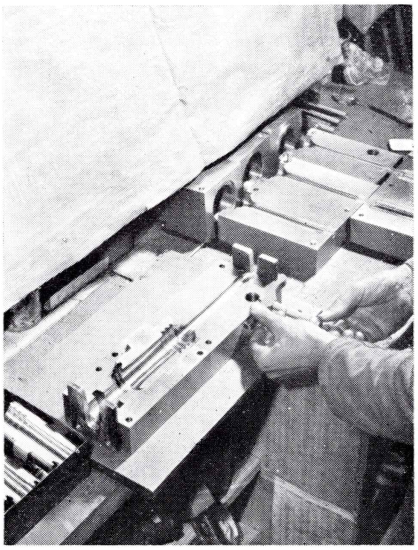
Very little factory maintenance work is now undertaken — it is primarily a manufacturing concern — and although not alone in this industry, the Company now produces 60 per cent of all the radio metalwork used in Auckland. The factory is able to produce radio components up to overseas standards and at a competitive price. The basic chassis manufacture is positively competitive.

Indirect export is handled by radio manufacturers, whose requirements are executed according to specification. Plans are envisaged to manufacture radio components not available as a result of import restrictions. Radio telephone metalwork is undertaken but not nearly in proportion to the volume of domestic radio components and chassis, which are manufactured in varying quantities from one off to thousands off.

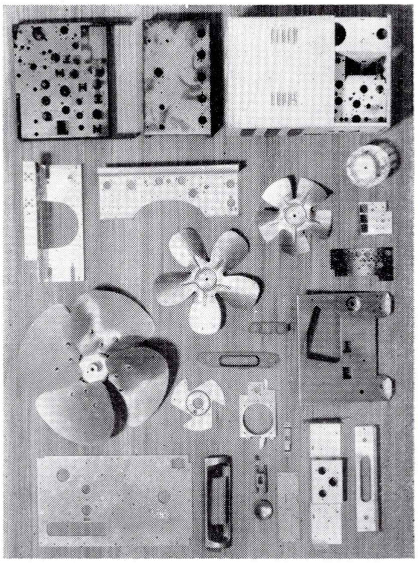
Since unskilled labour would not be suitable, this Company carries a large percentage of skilled men and technicians whose job it is to turn out annually £17,000 - £18,000 of radio components using 18 tons of aluminium and 16 tons of sheet steel. The supply of basic raw materials along with various grades of steel, non-ferrous metals and specialist materials has been from Great Britain, although infrequently an American source of supply has been drawn upon.

Now housed in its 6,000 sq. ft. factory, the Company has gone a long way since 1947. Arrangements are being made to expand the machine shop to cater for larger dies. The capacity of the press shop has been considerably increased — sets and components for 28,000 radios are now manufactured.

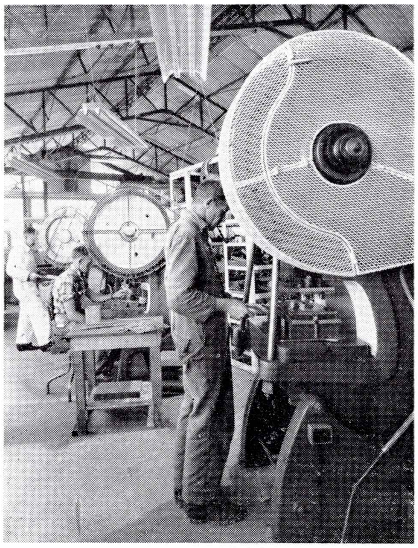
Directorate: E. R. McNamara (Chairman); J. W. Lewis; H. Latter (Secretary).



MAKING a rubber-moulding die.

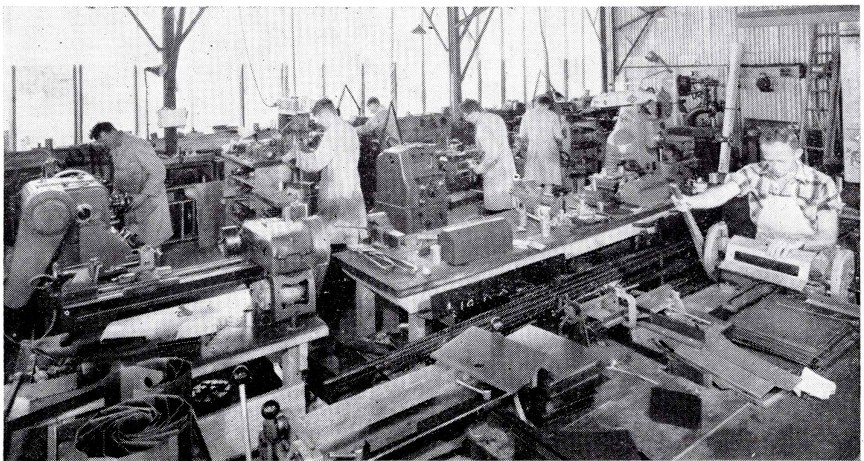


PRESSED components for radio, refrigeration and film-making industries.



A SECTION of the press shop.

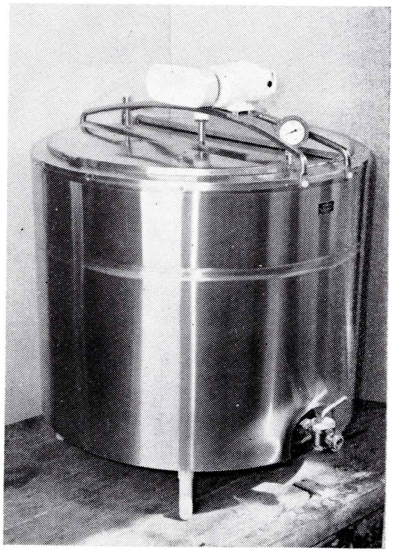
PORTION of the toolmaking shop.



Transport, processing & storage equipment for NZ's primary products

THE BERRY ENGINEERING WORKS LIMITED

Ashley Street, Palmerston North



A 200-GALLON ice cream batch pasteuriser.

For more than 50 years the quality and standard of its work has been this Company's proud contribution to industry. Founded in 1907 by Mr. E. D. Berry as a small family unit, within a predominantly primary producing district, its initial and natural interest lay in serving dairy factory equipment.

Foresight brought about a change in policy. The Company turned its attention to manufacture and became the pioneer fabricators of stainless steel sheetmetal in New Zealand, and the first to install the Argon Arc process of electric welding.

Specialised manufacture for the Dairy Industry

Dominating the Company's activities has been the supplying of equipment to the Dominion's dairy industry, exemplified by the extensively used 'Berry' coolers and cream storage vats.

The firm, which pioneered the farm collection of milk with bulk tankers, has a wide field of experience in the design and manufacture of all types of transport containers, including insulated and uninsulated and small milk and whey tanks for use on farm trucks. Auxiliary equipment, such as pumping gear and controls, sampling and storage equipment, side panelling, mudguards, access doors, etc., are built on the premises.

The first essential in the storage of bulk and liquid foodstuffs is cleanliness and resistance to corrosion. The Company processes stainless steel cream storage, receiving and holding vats up to 6,000 gallons capacity and milk storage tanks up to 7,500 gallons capacity, and internal and external coolers are built for the treatment of milk, cream, beer, ice cream, etc.

"Berry" plant and equipment serve industry

Vital to the storage of foodstuffs, refrigeration equipment, both commercial and household, is manufactured by the Company, and the well known Berry Forced Draught Evaporators are used extensively throughout the country.

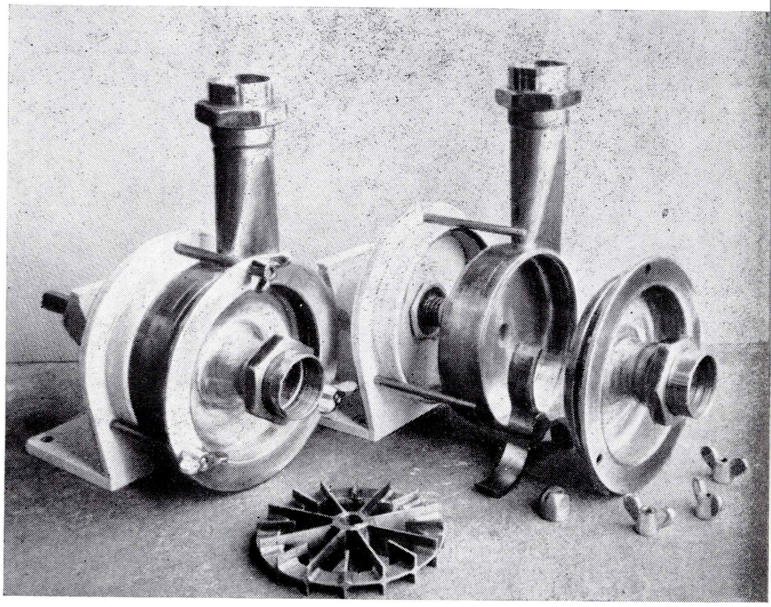
The range of industries served by The Berry Engineering Works is evident on enumerating some of its products, and here it is particularly noteworthy to cite that the first antibiotic plant used for the manufacture of penicillin in New Zealand was made by this Company. Other hospital and laboratory equipment manufactured includes sink bench units, sterilisers, and steam-heated drying and warming cabinets.

"Berry" equipment plays a vital part in all branches of industry where perfect cleanliness, corrosion resistance, heating, cooling, agitation, straining, sifting, measuring, homogenizing, etc. are required — e.g., pasteurizers, ageing vats and surface coolers for ice cream manufacture; evaporators, condensers, liquid receivers and base plates for refrigeration; dye vats, bolt washing machines, wool dryers and driers for textile and woollen mills; plant for soap works, cordial factories and chemical works.

With specialist training to exacting requirements, ensuring absolute satisfaction, this Company can justifiably lay claim to its status among major industrialists within the Dominion.

Mr. F. L. Berry, son of the founder, is the present Managing Director, and Mr. B. R. Austin, the General Manager.

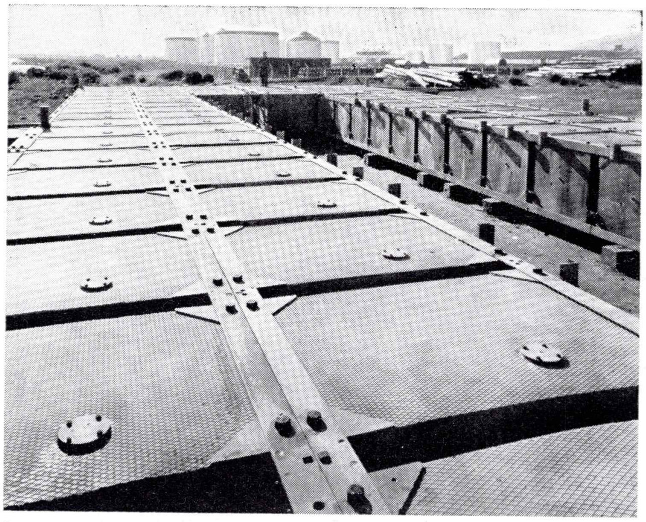
A TRUCK AND TRAILER milk collection tanker unit made by Berry Engineering Works. (Right) A "Berry" Hy-Flo stainless steel pump.



Specialists in metal protection

DAVY METAL

Madden Street



AN EARLY CONTRACT FOR METAL PROTECTIVE COATING: The flying boat pontoon at Mechanics Bay, Auckland.

Sparrow Industrial Pictures

Over the last 10 years the accent in the metallizing industry has been on sprayed metal "sealers" of varying thicknesses — 10 mills for severe corrosive environments, and thinner layers of two-four mills. In the latter instance the sprayed metal is used to enhance and prolong the properties of the paint film. Coatings of this kind are quite inexpensive, and often prove less costly than paint alone, even after a few years of service. In the specialised field of metallized coatings, the firm of J. A. Davy, founded in 1947, became the pioneers in New Zealand.

One year after its formation, operations began in Auckland. One of the first contracts was providing a superior protective coating for the base of a tank belonging to Vacuum Oil Co. N.Z. Ltd. The flying boat pontoon at Mechanics Bay was another job. Here the process was that of dry sandblasting and zinkoting. This process has now been discontinued, but initially it was a corrosive resistant coating obtained by brushing on sodium silicate, zinc powder and other ingredients and then baking the treated steel sections. Unfortunately, certain atmospheric changes during the baking process could lead to failure not easily detectable at first, and the system was dispensed with.

Metallizing equipment installed

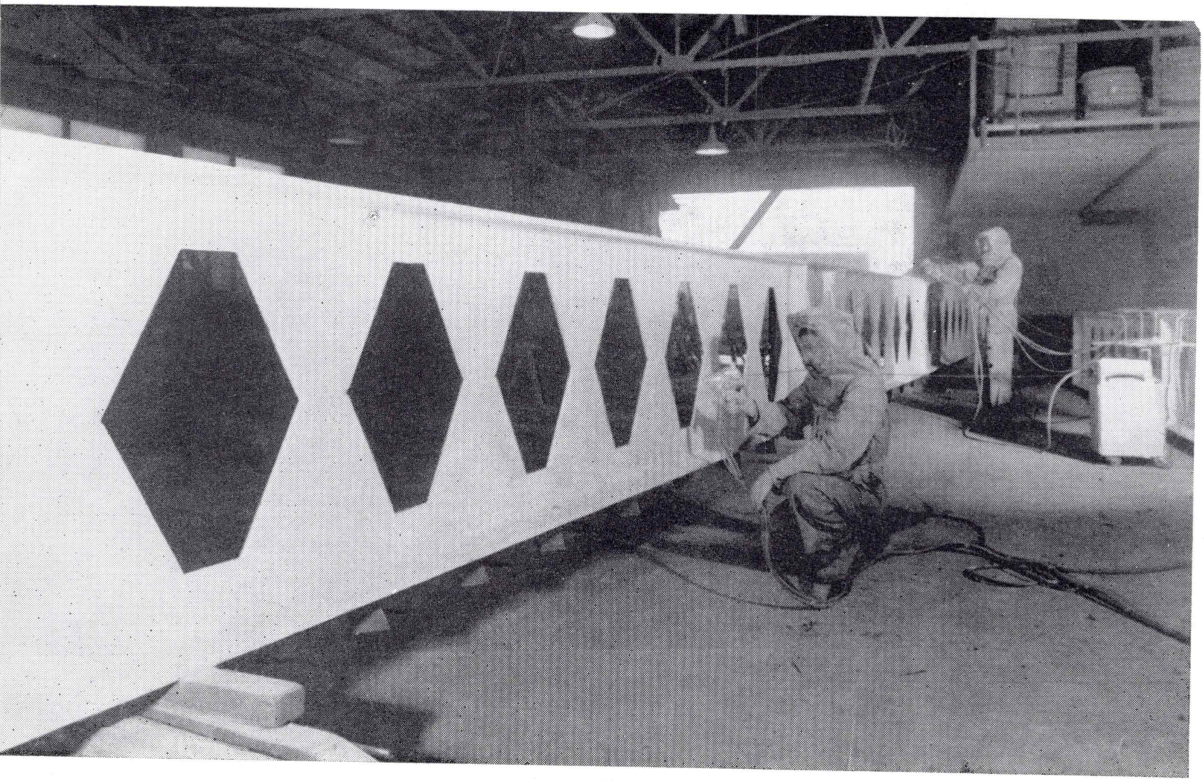
In 1948, a private company was formed. The directors, Mr. Robert Smith of Smith & Smith, and Mr. J. A. Davy entered into a partnership which proved both amicable and prosperous. A new factory was erected in Madden Street and another at Lower Hutt, Wellington. In 1951, the Company installed metallizing equipment. In this process, generally, zinc is fed through an oxy-acetylene pistol, which in turn converts the wire into a metallic spray. The spray forms an excellent coating on most surfaces. These metal coatings are porous, and, unlike galvanised surfaces, offer an outstanding base for paint film. In spite of its porosity and even when no paint is applied, sprayed zinc and aluminium provide long-term protection for steel. The reason is that these metals are anodic to steel and provide cathodic protection even at small voids in the coating, as well as being less permeable when environment favours the formation of insoluble salts and oxides within the pores. Thus, after painting, very little, if any, bare metal is exposed to corrosion.

In 1955, the Smith shares in this company were purchased by Winstone Ltd., and this new company began to manufacture metal window frames. A factory was erected at Morningside and in the following 10 months some 70 contracts were executed for buildings in all parts of the North Island. Zinc spraying is essential for the protection of steel windows, but the two distinct industries were by no means complementary as at first believed, and this led to the two groups separating. The Winstone group retained the metal window industry, and the Davy group confined itself to the metal protection division.

New Company formed for a big job

In 1947, an association was founded with the Margan family to shot-blast, zinc spray and paint the 930,000 sq. ft. of steel used in the Auckland Harbour Bridge. This was the largest zinc spraying contract undertaken in the world. Some 30 men working 24 hours per day (in shifts), six days a week for 14 months, completed the contract on schedule. The modern trend has thus been toward this protective coating treatment of metal.

A few years ago, on a project such as this, where severe corrosive conditions existed, paint film protection offered for steel was a drying oil pigmented with red lead or iron oxide. This has now been superceded by the modern process of metal sealing. Paint films are not dimensionally stable since they undergo changes with the passage of time. Shrinkage of the



ZINC PROTECTION: A steel member of the Auckland Harbour Bridge receiving a coat of zinc spray.

Sparrow Industrial Pictures

INDUSTRIES LTD
Auckland

film leads to crazing or pulling away of substantial areas. With inelastic coatings, the fissures extend through to the actual steel surface. In most applications almost all paint brushings pass some moisture by absorption to the base and in such cases rusting results, even though no actual fissure exists. Bridges, etc., which are built with the intention of maintaining appearance throughout their lives, are normally over designed with a considerable extra weight allowance. Although regular maintenance may be carried out (by painting), considerable rusting will undoubtedly follow. Thus, in the case of this huge Harbour Bridge contract as undertaken by Davy and Margan Ltd., the metal spraying of a clean steel surface was an intermediate step vitally necessary in its preparation, and relatively inexpensive. Paint application followed the preparatory work and the benefit thus derived will far outweigh cost in the extended life of the paint coating. The relatively thin coating of metallized zinc has provided a far stronger adhesion than might have been obtained by any other existing method, effectively preventing rusting at the interface and ruling out the common cause of paint failure.

Metal spraying of worn machinery parts

The directors have long felt that the metal spraying of worn machinery parts has not been adequately covered in New Zealand. They have evolved a process where metallic spray is used to make good the wear that machine components suffer through normal running. This process has exceptional promise and is resorted to widely in the United States. Worn parts sprayed by this method are usually superior to new parts for several reasons. The sprayed coating — usually 20 - 30 thousandth part of an inch thick — is slightly porous and consequently holds its lubricating oil as a sponge would, maintaining thereby a superior lubricating film between the working surfaces. Consequently, any part thus treated will outlast a new spare part by 200 - 300 per cent.

Any metal and other materials, such as tungsten carbide, may be sprayed so that the reconditioned part can have the properties of hardness or resistance against corrosive chemicals, non-existent in the original. The build-up process cuts the cost of a new spare by half, lessens the need to carry a large stock of new parts, and permits the machine to be in operation again n a matter of hours as against weeks or months, if such a part has to be delivered from overseas.

Reconditioning service

The proper use of this process demands technical know-
edge of a high degree. The services of Mr. R. D. Hilton of
Ardmore Engineering College were sought and the company of
Davy & Hilton Ltd. was formed in 1958. The Company is
ow reconditioning such parts as pump spindles, propellor
hafts, hydraulic rams, fan shafts, electric motor shafts, press
olls, diesel water jackets and similar items.

The parent company, Davy Metal Industries Ltd., still
oncentrates on the anti-corrosion aspects of engineering. Work
nges through zinc spraying of steel beer barrels, balustrades,
shing launches, structural steel members — e.g. that of the
ew grandstand at Ellerslie racecourse — harbour buoys, wharf
stallations, petrol road-tankers, tanks of all descriptions, metal
indow frames, boat trailers, steel furniture, condensor tubes,
pe lines to bridges including the steelwork of the present
inistry of Works bridge project.

Since paints and primers used must be compatible with
rayed metal, it is essential to be conversant with the facts.
avy Metal Industries possess that technical knowledge and
rvice to undertake any job that may come to hand. The firm's
putation is based on know-how, service and satisfaction. Their
licy, as in the past, so in the future, will aim to keep abreast
modern trends, technical data and its application to suit
al conditions.

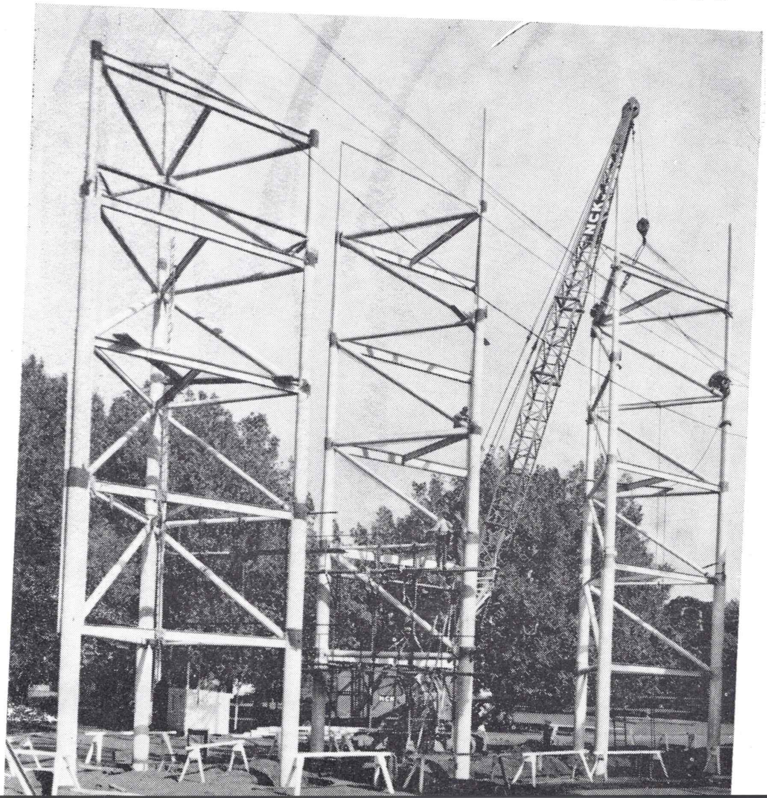
Directorate:—J. A. Davy, Senr., Managing Director; J. A.
vy, Junr., General Manager; C. J. Davy.

Applying a coating of zinc to steel by oxy-acetylene pistol, which converts wire into spray.

Sparrow Industrial Pictures

STEELWORK FOR NEW ELLERSLIE GRANDSTAND being erected after receiving a protective coating.

Sparrow Industrial Pictures A-51



Range plates, heating elements and carbon products from three specialist factories

DONALD BROWN & CO LTD

128 Ponsonby Road, Auckland

The history of the development of a company such as Donald Brown & Co. Ltd. is always of interest. Avoiding extravagant claims and wishing only to perform successfully a definite function in New Zealand's economy, Donald Brown & Co. Ltd. has set out to design, perfect, manufacture, service and establish itself as the leading Element and Water Heater manufacturer in the Dominion. It is prepared constantly to meet, in this particular sphere, the demands made upon it by industrial, domestic and general usage.

Expert design and construction results from long experience and technical knowledge in this field. The entire executive, as well as all key members of the staff, are technicians and highly skilled operators in the electrical, radio and engineering fields. And thus, this Company is in a position to supply a wide range of products to meet special requirements. It is proud to mention too, that the firm has developed a most efficient and economical heating unit, revolutionary to the trade.

The dominant and respected position in the industry now held by Donald Brown & Co. Ltd. had its inception during the days of the depression as a one-man electrical contracting concern, the location of which was in the back premises of a butchery in Auckland. The principal, Donald D. Brown, saw the need of good quality electric elements comparable with overseas types. The original element, entirely hand-made, processed prior to 1938, is still in use today. Since that date, the far-sighted policy of the directorate, with the accent on "only the best", and its modern production methods, which shorten the time between design and large-scale production, is in a position to meet the requirements of the New Zealand market, and to compete in the markets of Australia and South Africa.

In the Company's fully equipped factories in Auckland, Penrose and Wellington where possible, dies, jigs, etc., are manufactured on the premises. Thus, with these single-purpose machines, the public can be served to the best advantage; "Contact us — we can make it" has become the Company's slogan. Believing that an unsurpassed quality product builds satisfied customers, the Company to this end employs consulting technicians ready to give advice and render a service.

The Company's activities can be conveniently divided into three distinct classes:

(1) Manufacturing of "Hermetic" solid range plates, water heating and radiant heat elements.
(2) "Hermetic" water heating units.
(3) Carbon brushes and all other carbon accessories and specialities, as agents for The Morgan Crucible Co. Ltd. of England.

Supplies of raw material used in these plants are drawn from the United Kingdom, Canada and Sweden. They are: copper, aluminium, steel and brass sheets; copper, inconel (Stainless) aluminium, bundyweld, "Alumbro" and "Alumbraloy" tubing; nickel-chrome wire, carbon in block, etc.

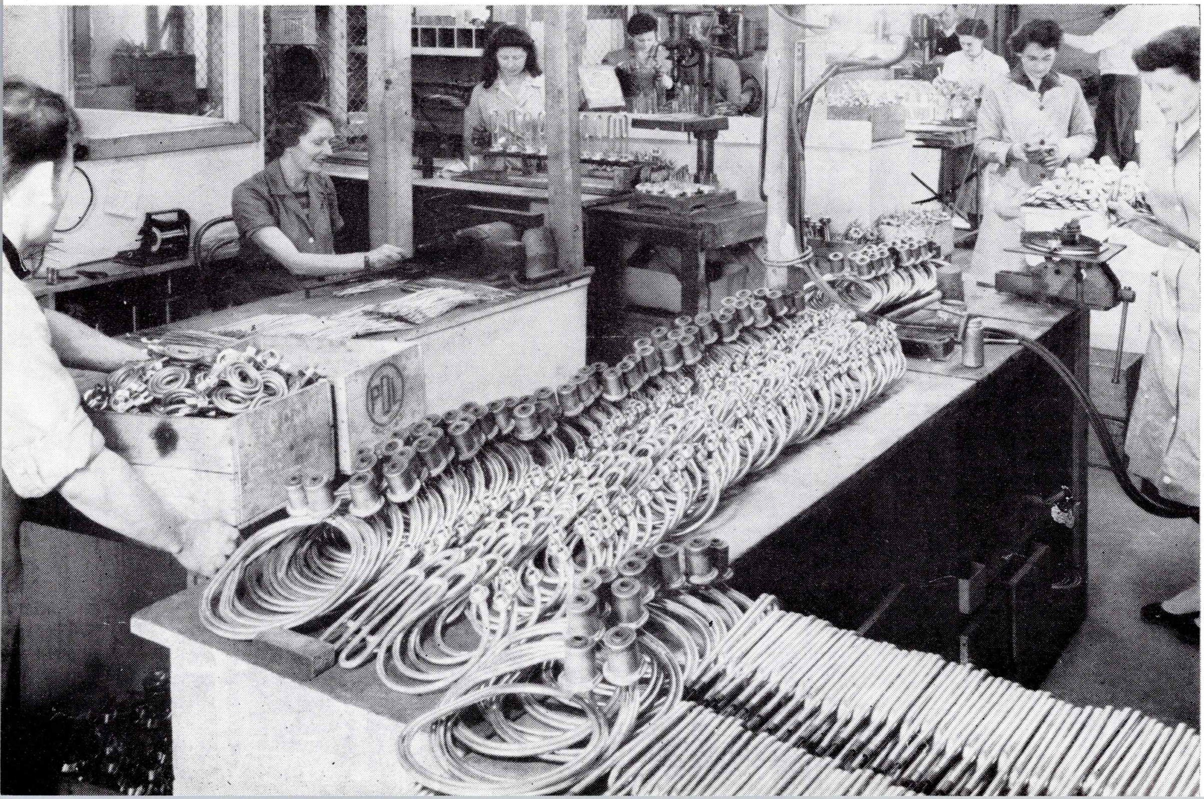
Every type of electric heating element, both for commercial and domestic usage, is processed. Special units are manufactured for dairy heating purposes. A wide range of replacement elements is made for practically every type of washing machine and hot-water cylinder made in New Zealand. It is small wonder that the trade name "Hermetic" has become almost a household word. Still further, replacement radiant-heat elements are in production for infra-red cookers.

The aforementioned products are made to rigid, close tolerances and the materials are the best procurable. Testing is carried out with the very latest and best equipment. "Hermetic" products are safe, reliable and efficient.

The Company markets a variety of solid range plates. In this connection it is proud to announce a new advanced range plate that supercedes the radiant type. Features of this particular plate — Hermetic Express Boiling Plate — are:

(a) Heat is retained after power is turned off.
(b) One basic plate fits almost any electric range now in New Zealand, and therefore obviates the holding of large stocks.
(c) The usual "Hermetic" high standard, coupled with a unique formula with special ceramic and specially smelted iron.
(d) Centre depression for slightly convex utensils.
(e) Easy to keep clean.

The Company's number two factory caters principally for sheetmetal production. Here "Hermetic" electric water heaters



THE ILLUSTRATION shows several of Donald Brown's staff assembling elements. Members of this staff are highly skilled operators, trained to the finest degree of accuracy, and are all experts in their own particular field. This ensures that Hermetic products are of the highest quality obtainable.

Right: A VIEW of the Carbon Brush manufacturing plant in Auckland.

Centre: PORTION of the well equipped machine shop maintained by Donald Brown & Co. Ltd.

Bottom: ANOTHER VIEW of the Brush making plant.

are manufactured. Types are designed to suit a particular purpose, and almost any requirement. These are built to the highest standard. The inner cylinders are made of copper and all joints are silver brazed, making the heaters suitable for use in almost any water supply — regardless of its degree of hardness. The outer cases are made of corrosion-proof steel, attractively finished in high quality enamel with chrome trim. The end product, built entirely in the factory, is fitted with a specially designed heating element for long life. Success in this sphere can quite easily be gauged from the fact that these heaters are installed in thousands of New Zealand homes, offices, shops, factories and many Government Departments.

The Company's third plant at Wellington primarily manufactures Carbon contacts, etc., for that area. The renowned Morgan Crucible Co. Ltd. of Gt. Britain has urged Donald Brown & Co. Ltd., as its agents to expand this industry, and the Company with its Auckland plant and the Wellington one is the largest producer of carbon products within the Dominion.

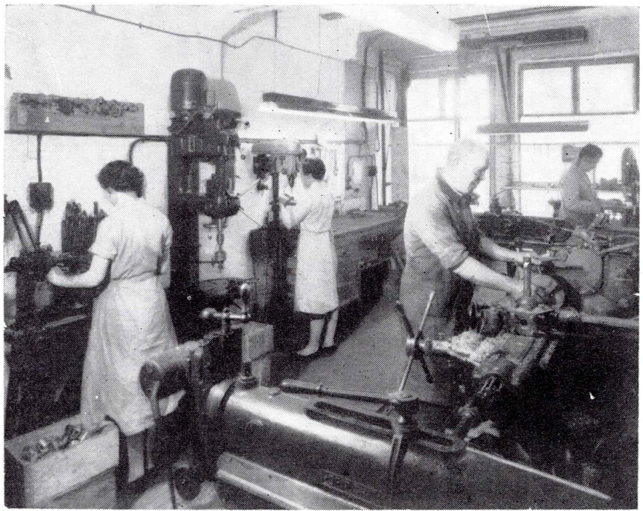
Carbon brushes (approx. 1,000,000 produced annually) of all descriptions, carbon bearings, seals, piston rings, to mention but a few carbon lines, are being handled in these plants. As such they have become contractors to the New Zealand Government Departments, the many hydro-electric projects, etc.

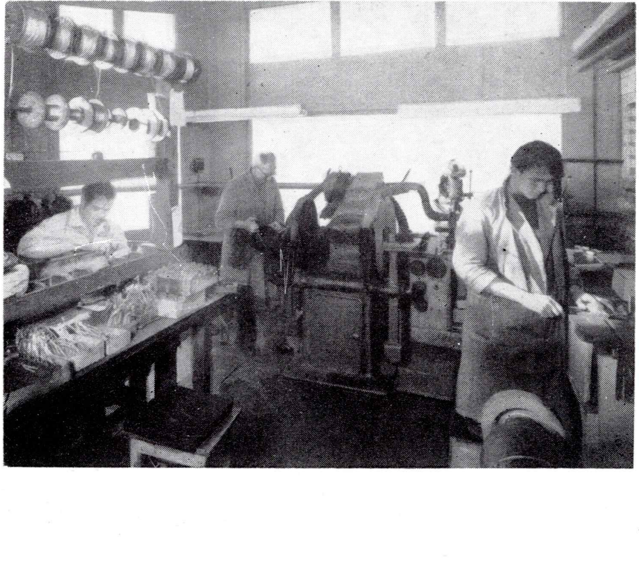
HERMETIC LTD.

From April 1st, 1959, the waterheating and element manufacturing activities of Messrs. Donald Brown & Co. Ltd. have been taken over by Messrs. Hermetic Ltd.

This company will continue with the original policy of manufacturing only high grade products, and further, will now be able to concentrate on the latest developments in the electric element and waterheating sections of the electrical industry.

The Managing Director is Mr. Maxwell A. Davies, for many years a Director of Donald Brown & Co. Ltd., and the managership of the Company is in the capable hands of Mr. Geo. Hiscock. Both these men have had long experience in the electrical ad engineering fields, and this will help the Company to serve efficiently its fast growing clientele of electrical appliance manufacturers, besides ensuring that the replacement element market is supplied with really high grade products.





New Zealand ingenuity provides earthmoving

TRACTOR EQUIPMENT

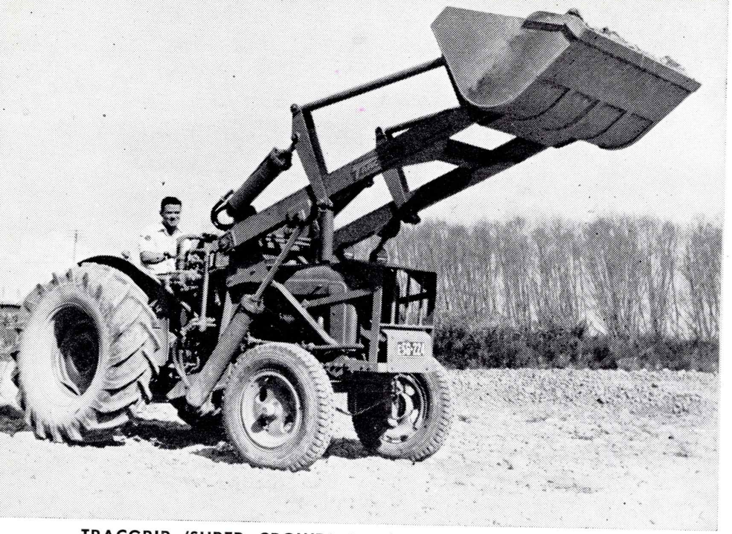
Tractor Equipment Co. Ltd. commenced in the active selling of equipment in the tractor field in 1949. Tractor manufacturers were at that time producing new models, better equipped, fitted with pneumatic tyres, and with a higher developed horse power. The Company realised that, with the availability of better tractors and the increased use of mechanical power in the industrial field, an opening existed for the development of suitable equipment for attachment to these power units. Hydraulic power lifts had been successfully used to utilise the power of the tractor for operating all types of agricultural implements. It was logical, therefore, to reason that what had already been accomplished in the agricultural field could, with advantage, become the pattern for progress in the industrial usage of tractor power and matched equipment.

It became apparent that new ideas, methods and engineering ability properly applied, could produce in this country a line of hydraulically operated machines that would fulfil operators' needs for mobile labour-saving units to improve the economy of digging and loading. An early start in a modest way brought into production a half cubic yard industrial loader, built by an associated manufacturing company, Steel Equipment Ltd. Working in close liaison with its design staff, and pooling resources, the Company gradually started to make headway in a new field of development.

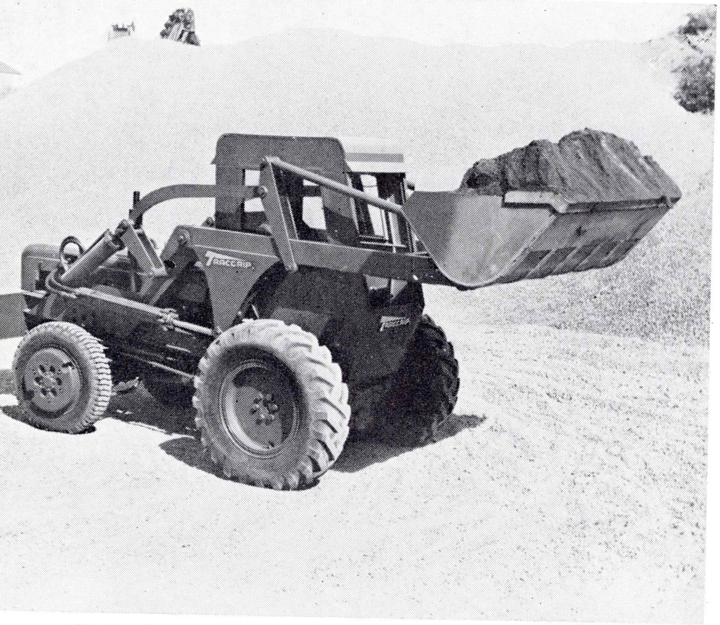
An Ample Supply of Spares

It was realised at an early stage that one of the users' chief embarrassments could be avoided if the provision of suitable replacement parts received due attention. It became the settled policy of the Company to ensure that after-sales service of any of the Company's products should be maintained, without the costly delays associated with prolonged hold-ups through an inadequate parts service. With considerable pride, the Company can say that complete parts service is available for the whole range of manufactured equipment, right from the first industrial loader produced, to the latest hydraulically-operated machinery to leave the Company's premises.

The early years of manufacturing brought their own problems of staff training, design and development of new machines, and co-ordination of supply of raw materials and component parts, but the enthusiasm and sense of achievement shared by all working as a team overcame the obstacles. Tractor Equipment Co. Ltd. kept all production under the one

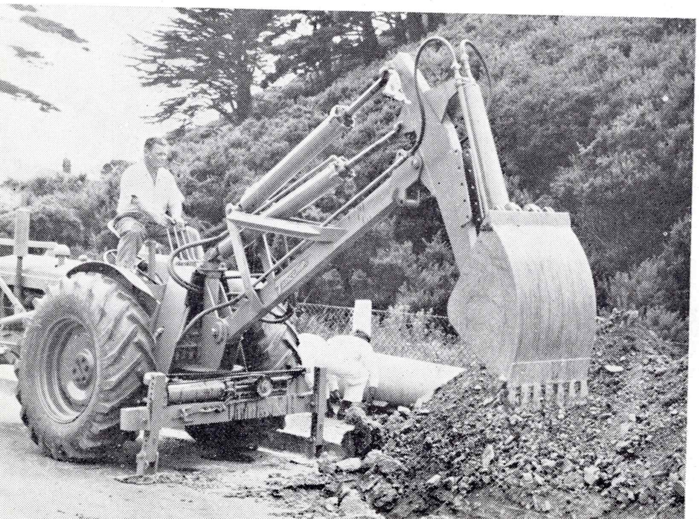


TRACGRIP 'SUPER CROWD' 1 cub. yard front-end loader, with full hydraulic bucket 'crowding' and tipping action. Loading rate averages 2½ yards per minute.

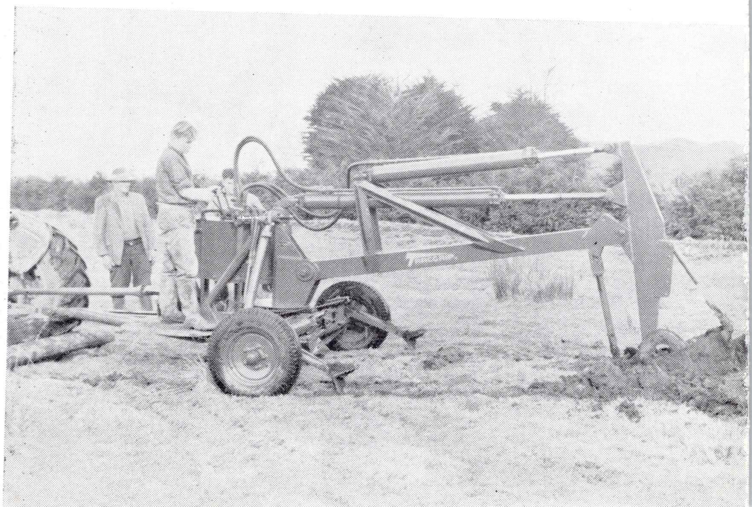


THE TRACGRIP MODEL 450 ('Fourfifty') 4-wheel drive, 1 1/3 cub. yard loader has proved itself a high capacity loader in all conditions, from riverbeds to stockpiles. The bucket has a 40° 'roll back' and 50° discharge angle, and dumping clearance of 7ft. 6in. Available with standard gearbox or torque converter transmission.

THE TRACGRIP REAR MOUNTED DIGGER shows its ability to dig through bitumen surfaces without assistance from air picks. Digging depths up to 9ft. 6in., in widths of 8in. to 24in., are within the scope of this unit.



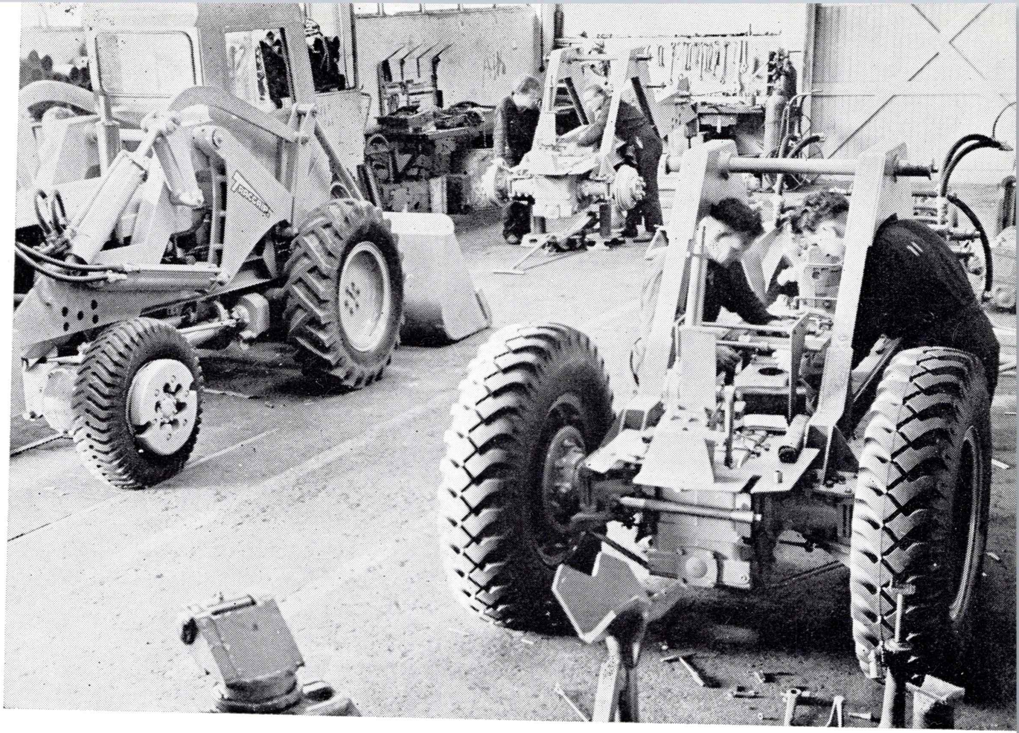
TRAILER MODEL TRENCH AND DRAIN DIGGER, widely used throughout New Zealand on farm drainage contracts. Can be attached to any wheeled or crawler type tractor delivering 20 H.P. from p.t.o. Digging depth, 10 ft. in widths from 8 in. to 24 in.



chines equal to world's best

CO LTD

Church Street
Palmerston North



A BATCH OF TRACGRIP 450 4-wheel drive loaders being assembled in the factory at Palmerston North. The Company welcomes visitors to the manufacturing and assembly branches.

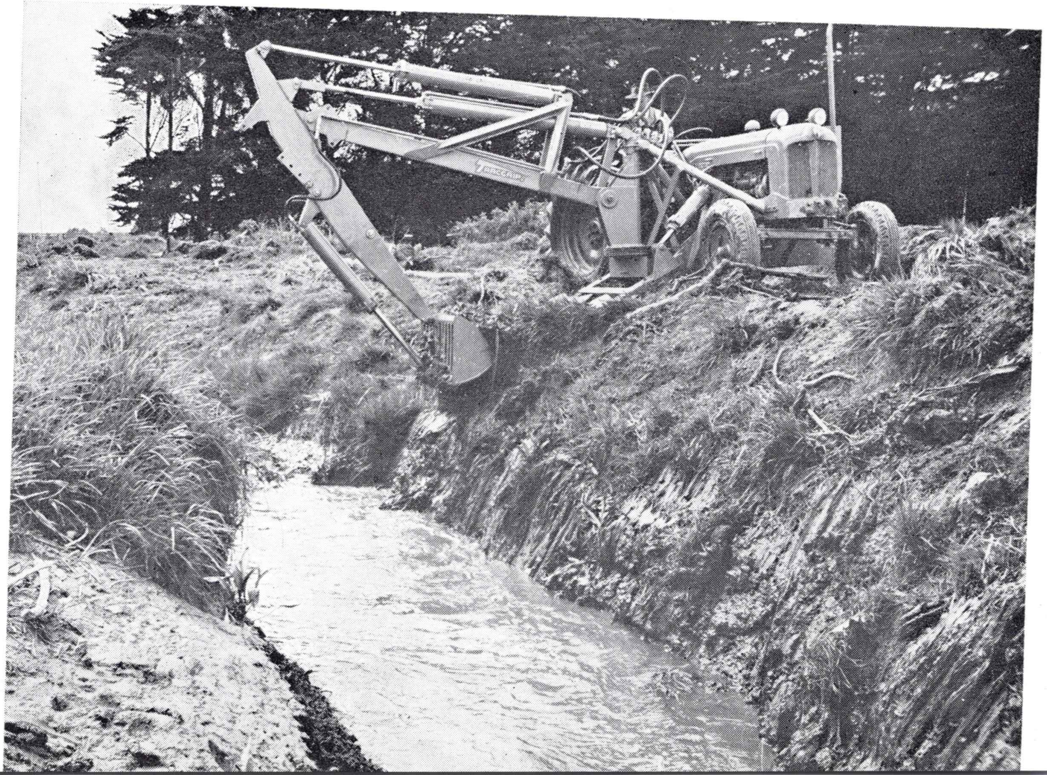
sales brand of "Tracgrip" to ensure, over the years, a known name of equipment that, on performance, would command the respect of users and lead to national acceptance of the Company's output. Each year has consolidated the Company's position, until today, the leadership in design and quality ensures public approval of each new model.

The Burden of Labour is Taken from Man

New and interesting hydraulic machinery has been added to the range, covering a wide field of activity in digging and loading. Versatile mobile units incorporating many new features for digging trenches and cleaning drains have, from time to time, been added to the line of units that take the burden of labour from manual energy and transfer the effort to smooth-acting hydraulic power. Tractor Equipment Co. Ltd., keeping in the van of progress, has assisted significantly in improving farm drainage and increasing production from the land, by harnessing tractor power and hydraulic diggers to a job long deferred through lack of suitable machinery. The ability of the designer and the skill of the manufacturer have been pooled to provide hydraulic drain digging and cleaning machines, which will economically excavate new drains or widen and clean existing drains by the mere movement of control levers by the operator.

Tracgrip loaders, with full width 1 yard buckets, four-wheel drive, torque converter transmission and power assisted steering, scoop up effortlessly large quantities of material to aid the contractor in his everyday jobs. Tracgrip Timber Fork Lifts handle capacity loads of either felled logs or sawn timber, in the bush and in the yards.

In many fields of work the resources of Tractor Equipment Co. Ltd. have provided an answer to a better way of doing things. Users' problems are a challenge to the technical staff and engineers of Tractor Equipment Co. Ltd., and they derive satisfaction and reward in creating hydraulically-operated machines that will do more work in less time at lower cost. With the forward march of hydraulics, and the realisation of the possibilities that will arise for the application of this smooth silent power, new horizons have opened up, and the quest continues unremittingly for new and improved machines that will contribute to the development and prosperity of our country.



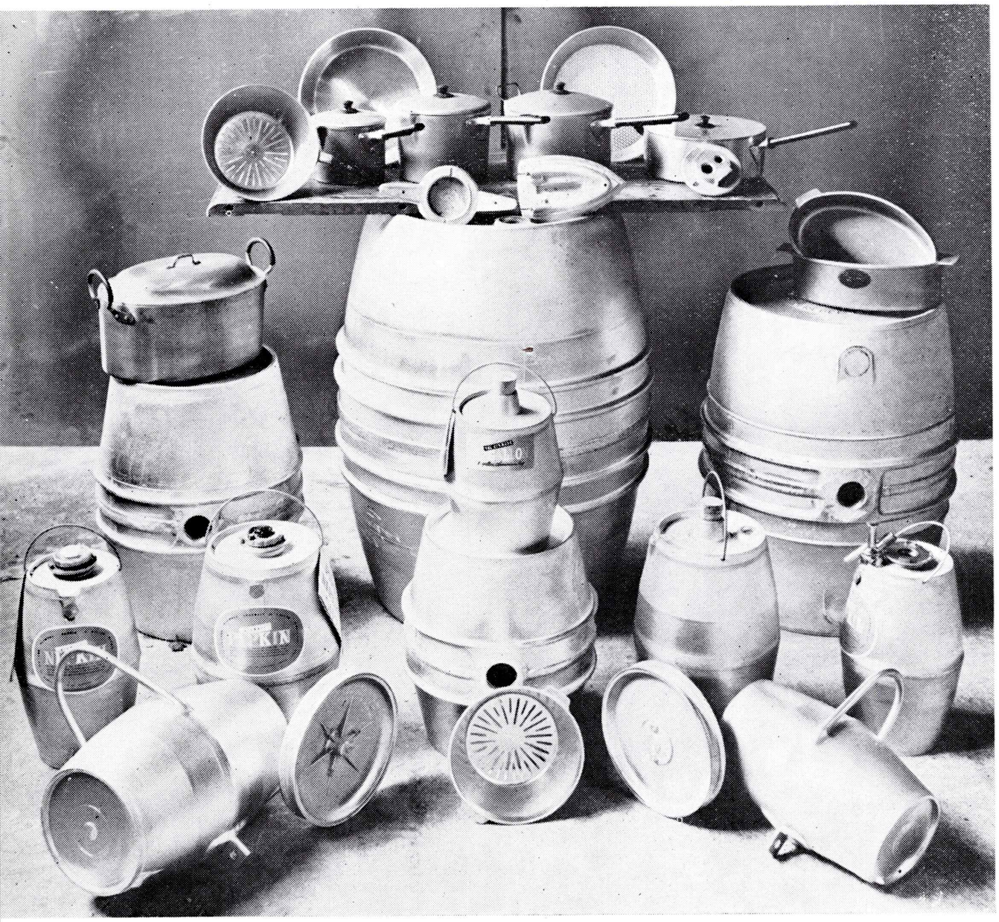
TRACGRIP SIDE-MOUNTED DRAIN CLEANER & DIGGER:

A very popular machine for contract drain cleaning and reconditioning. The bucket swings to either front or rear of machine to dump its load as work proceeds at speeds of up to five chains per hour. This machine takes it place in the front rank of industrial hydraulically operated equipment with the granting by the English Patent Office of full protective Letters Patent No. 751336 in the traditional homeland of engineering — a protection also granted in Australia and New Zealand; this is a fitting tribute to the resourcefulness and skill of the designers and engineers.

Are you planning a new durable product? Aluminium is durable, light, corrosion-resista

ALUMASC

224 Cambridge Terrace,



A RANGE OF PRODUCTS MADE BY THE ALUMASC PROCESS: Kegs from 1 gallon up to 36, pots and pans, mooring buoys, golf buggy wheels, iron sole plates with cast-in elements, etc.

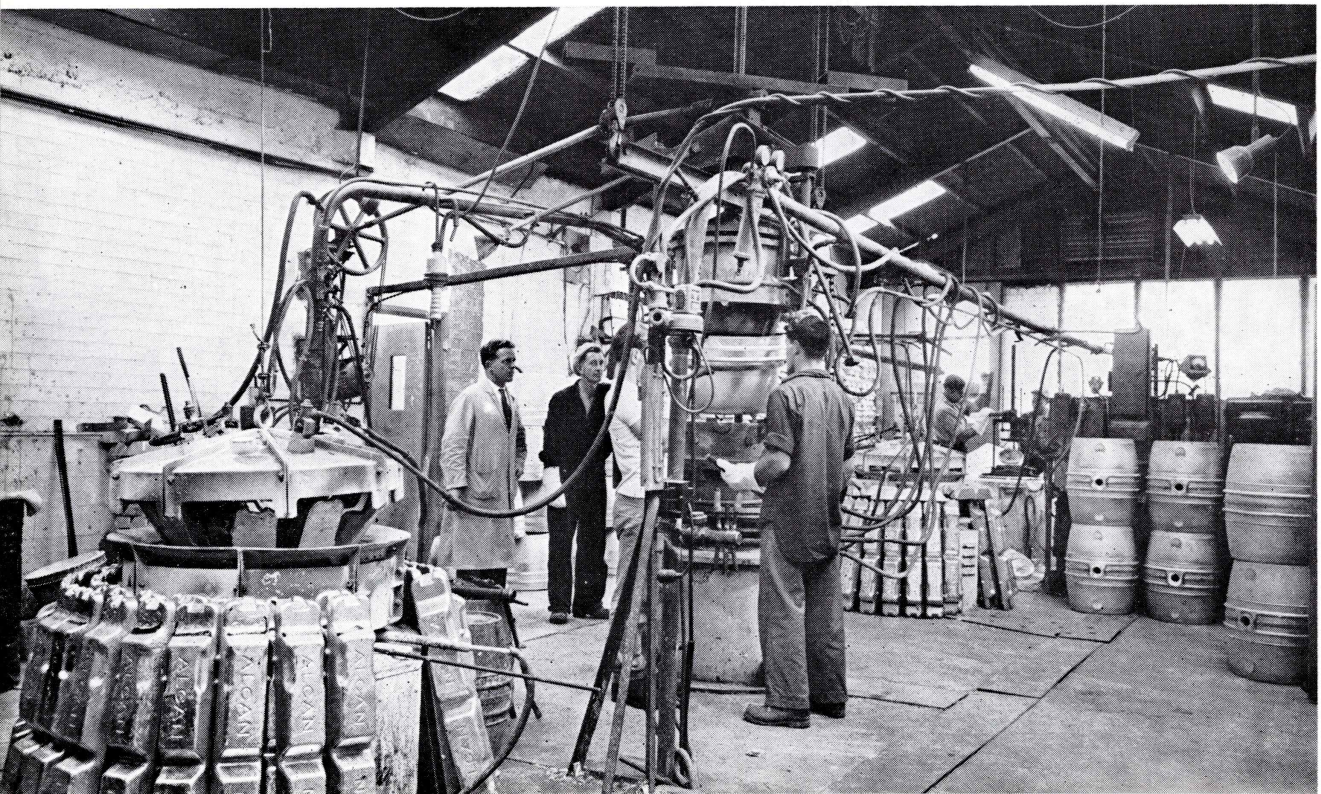
Photo: Laurence A. Hoare

The Alumasc process of aluminium low pressure diecasting was introduced in New Zealand in 1952, when this Company commenced operations, under license from Alumasc Ltd., England, with a view to producing casks for the brewing industry. Up to that time brewers in New Zealand had used the oak and laminated wooden casks, but in the interim Alumasc has brought a new standard of hygiene and reliability to the carriage and storage of beer, with aluminium casks.

Although the Alumasc process is particularly suitable and economical for cask production, the process has also been used to cover all manner of different types and sizes of castings for other industries. Several large companies in Sweden, France, U.S.A., and Ger-

THE FOUNDRY: COMING OUT OF THE DIE is the largest permanent-mould aluminium die casting made in the Southern Hemisphere, weight 54 pounds. No runners or rises project from these castings, only useful metal being cast. All furnaces are electrically heated and controlled, and are equipped with gas to pre-heat ingots that weigh 32 pounds each. Weight of dies: approximately 1 ton for the 36 gallon brewery beer barrels.

Photo: Laurence A. Hoare



and painting is unnecessary

A'SIA LTD

Lower Hutt

many have also been licensed, and in Germany the Boche Company is perhaps the best known.

Old "friends" superseded

Initially, old and developed sets of dies for casks were sold to this Company by Alumasc, England, these being for the 4½, 9 and 18 gallon sizes—hence the disappearance of the 5 and 10 gallon kegs so well known in New Zealand in the past.

These imported dies were made from good quality grey iron and were renovated prior to use. However, it was found that improved design and die operation could be effected, and all cask shapes were changed, necessitating considerable machining and replacement of components to suit local conditions.

Over a period of time, a toolroom was established to cope with the Company's work and also the requirements of its customers.

As a result of experience it has been found that die costs for the Alumasc process are cheaper than for other types of die castings, and also are competitive with quantity patterns for sand cast production.

In 1952, the delivery of suitable aluminium furnaces from England was protracted and the price prohibitive. Therefore, it became necessary to design and develop electrical resistor furnaces that would perform the work. These were built in the factory, and today five standardised electric furnaces are maintained and equipped to use town gas during power cuts, and a further large radiant furnace is in the course of construction.

Initially, this process of low pressure die casting, apparently simple to operate, gave plenty of headaches and heartaches, as production had to be started without overseas technicians.

Today, Alumasc (A'sia.) Ltd. is one of the country's largest users of aluminium ingot. This is obtained mainly from Canada, but also some is imported from England. L.M.6 silicon aluminium is used for most purposes, but for special jobs metal is alloyed in the Company's electrically-controlled furnace to meet any specification.

The main aim of Alumasc (A'sia.) Ltd. is to promote the development of secondary industry in New Zealand by supplying high quality pressure tight castings, thereby improving the appearance and durability of New Zealand manufacturing. Are you planning to market a new product which must have the qualities of durability, light weight, high resistance to corrosion, and without the necessity for painting? If so, see Alumasc (A'sia.) Ltd., Lower Hutt.

HEAVY ARGON ARC WELDING of a 36 gallon beer barrel (360 amps., argon 16 cu. ft./hr. with 7/32 electrode). This operation gives flux-free joining of cast half-castings; 20 minutes is required to circumvent the bilge.
Photo: Laurence A. Hoare

THE MERCER FACTORY AND HEAD OFFICE AT CHRISTCHURCH—a total of 75,000 square feet of floor space.

J. MERCER & SONS LIMITED

75th JUBILEE 1884 — 1959

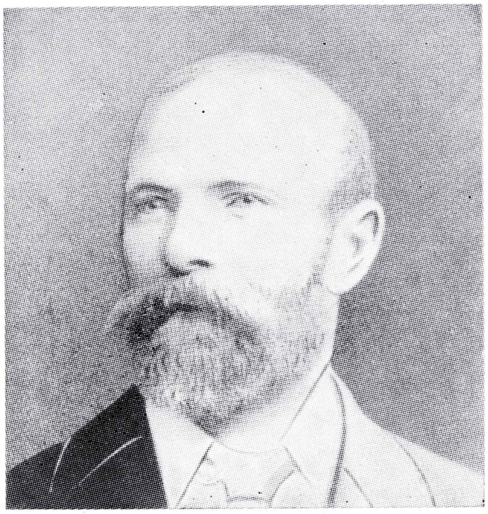
Seventy-five years of steady progress, accelerated during the past 20 years, marks the 75th Jubilee of J. Mercer & Sons Ltd., leading craftsmen in metals.

The founder, Mr. James Mercer, then a young man and a skilled coppersmith, established a small business in Tuam Street, two years after first coming to Christchurch from Dunedin to carry out a marine coppersmithing repair job at Lyttelton.

Much of his equipment, such as forge, blower etc., had to be made by his own hands and then, with one apprentice, he commenced the manufacture of washing boilers and other domestic lines. From these small beginnings, the firm of J. Mercer & Sons Ltd. has grown, with the main works and head office at Christchurch, and branch works and offices at Auckland and Wellington respectively.

Mr. James Mercer, present Managing Director, commenced as an apprentice under his father and was taken into partnership after World War 1. He completed 50 years' service with the firm in 1955, a really fine record of service. Other serving directors are Mr. R. A. Mercer, Mr. J. A. Mercer and Mr. J. J. Mercer, another director, Mr. A. E. Mercer, having retired from the directorship after 36 years' service.

With the advent of stainless steel in sheet and other forms, the use of copper for many purposes was largely superceded, Mercers being quickly alive to the domestic, commercial and industrial possibilities of the new metal.



THE LATE MR. JAMES MERCER (Founder)

The Widest Range of Stainless Steel Equipment

The fabrication of stainless steel equipment for private homes, hospitals, institutions, hotels, restaurants, and for

JAMES MERCER COPPERSMITH.

THE ORIGINAL PREMISES and early staff of the late Mr. James Mercer

general industrial use, became more and more associated with the name of J. Mercer & Sons Ltd. Today, this firm is known to be the producer of the widest range of stainless steel equipment in the World.

A new catalogue of hospital equipment, at present being prepared, will consist of a bound volume of over 700 pages, whilst industrial equipment, to mention a few random lines, ranges from steam jacketted pans to mechanical piece dyeing machines, from seamless stainless steel milk vats to huge storage vessels with geared motor driven stirrers, and from stainless steel buckets to fermenters of 30,000 gallons capacity.

Rapid Expansion in past 21 Years

Many of the firm's productions have been the first of their kind manufactured anywhere, and, although similar lines have been produced overseas sooner or later, some have not yet been developed in other countries. Numbers of the lines introduced over the years by Mercers have been copied by other New Zealand manufacturers but, by keeping up to date with latest trends and maintaining a high standard of workmanship, this progressive organisation has been able to expand at a considerable rate—twenty-one times over the past twenty-one years alone. In March, 1955, a new factory and office block, totalling some 8,000 square feet, was built at Auckland, the works area being doubled some two years later, giving a new total area of 15,000 square feet.

Again, in September, 1957, a new factory of 10,000 square feet was built at Trentham, Wellington, on a site large enough to permit unlimited future expansion, the original factory building at Vivian Street, Wellington, being converted for offices and stores, two floors being let to tenants in the meantime.

Co-operation with Large Overseas Manufacturers

In recent times, arrangements have been made to co-operate with some of the largest manufacturers overseas in regard to the design of hospital sterilising and other equipment, together with general cooking and food serving equipment etc. with which the name of Mercer has already been associated for a very long period of years.

These tie-ups will ensure that latest trends overseas will be closely followed at all times, whilst an efficient designing and technical staff, working in close association with Health Department and Hospital Architects, Engineers and Dietitians etc., see to the implementing of this policy.

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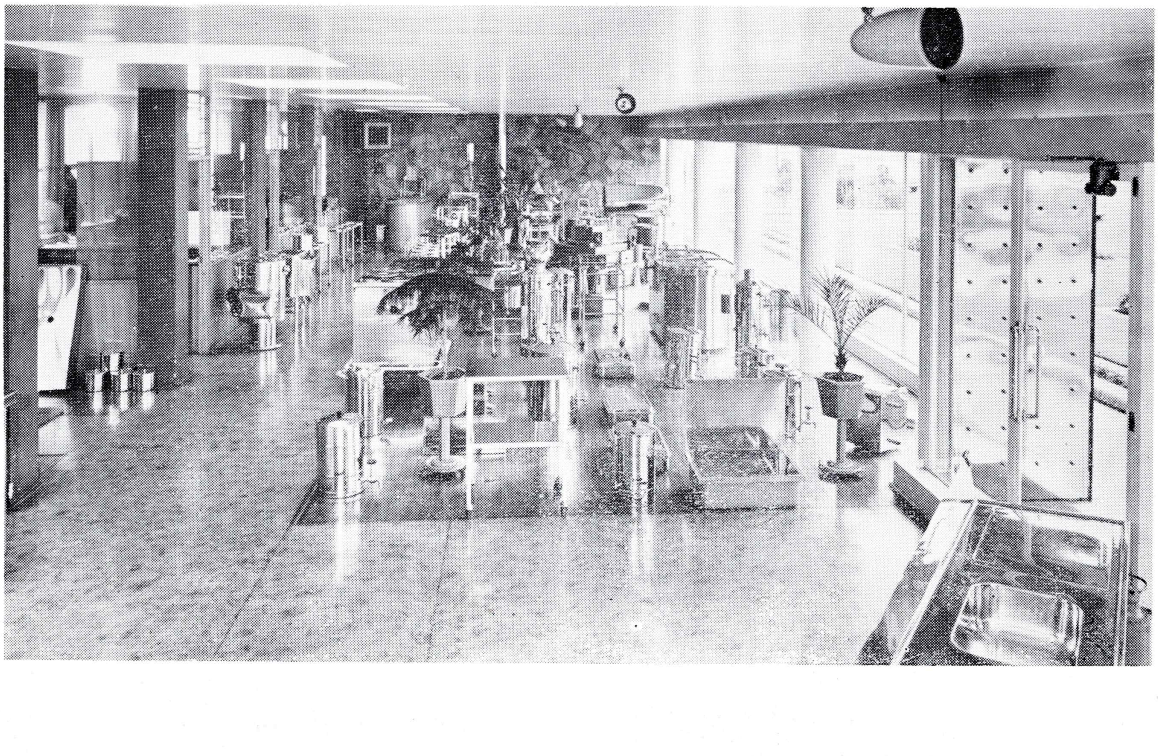
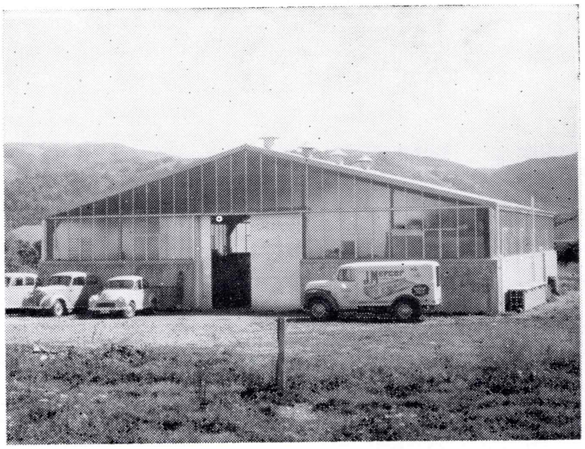
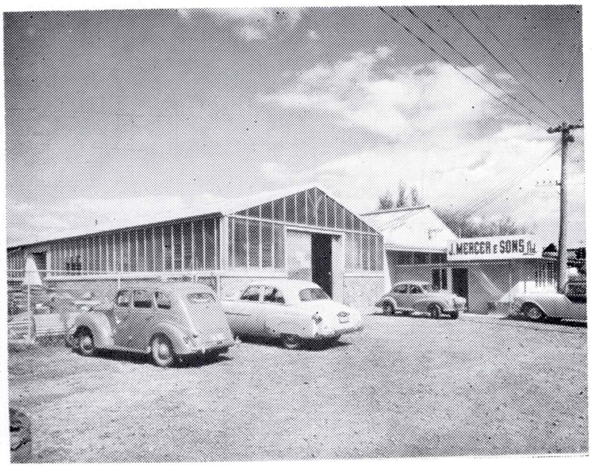
AN INTERIOR VIEW of the modern showroom at Christchurch admirably set off by the gardens in front.

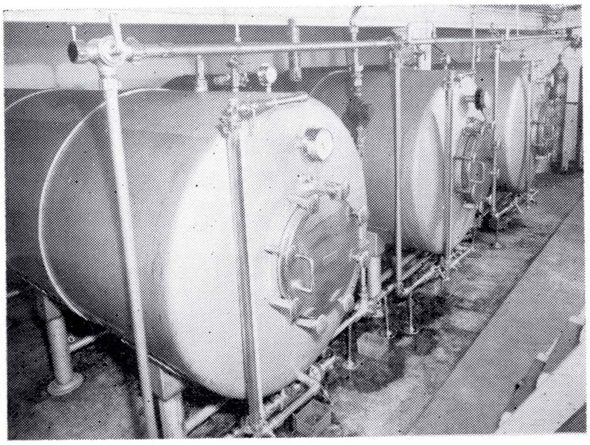




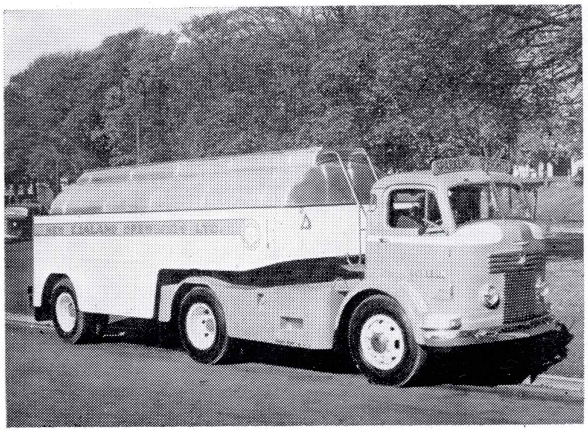
SITUATED ON A SITE which will permit of unlimited expansion . . . the new factory block at Trentham, Wellington.



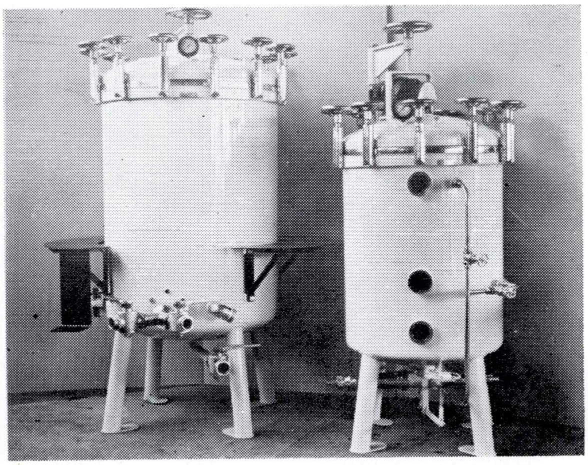
THE NEW FACTORY and office block at Auckland, the works area already having been doubled since it was first built.



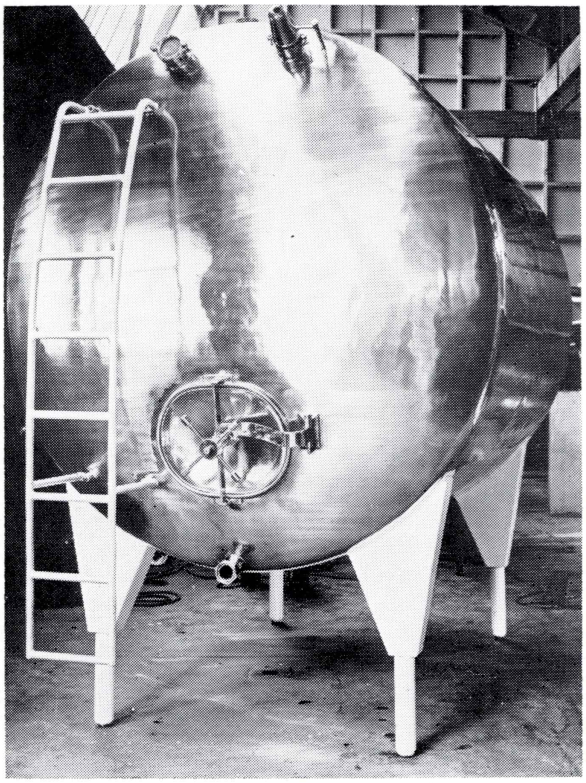
A MODERN CELLAR showing an installation of three 10-hogshead cellar tanks with "all stainless steel" reticulation. From brewery via tanker to the consumers' glass, there is no possibility of contamination at any stage. New Zealand leads the World in this form of beer delivery, which, apart from big savings in transport costs etc., ensures strictly hygienic conditions at all times.



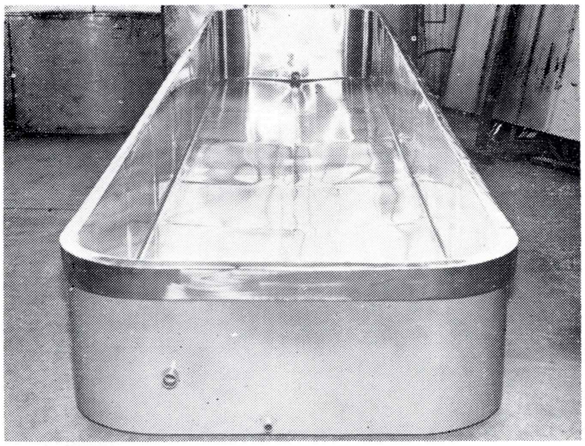
TYPICAL OF THE TYPE OF WORK turned out by Mercers—a modern beer tanker of 1,890 gallons capacity.



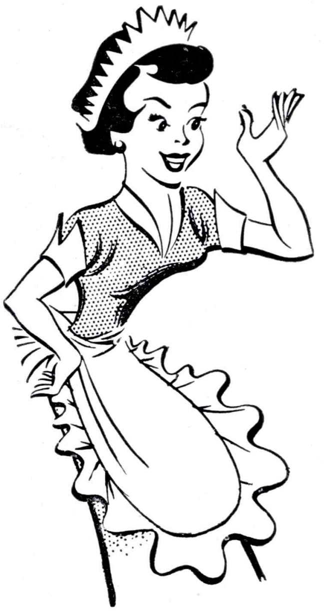
A DIATOMACEOUS EARTH beer filtering unit fabricated from heavy stainless steel, working pressure 100 lbs. p.s.i., capacity 7,000 gallons per hour.



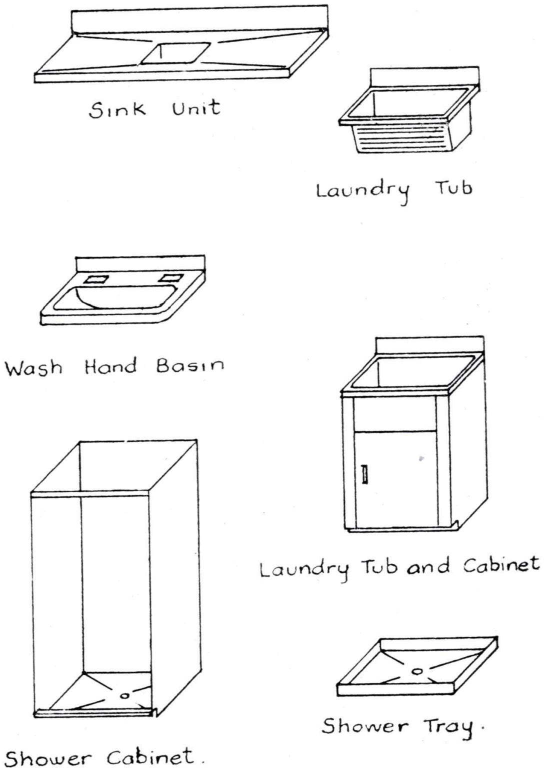
STAINLESS STEEL MILK STORAGE VESSEL, 2,000 GALLONS CAPACITY. Large numbers of vessels of this type have been supplied to all parts of the Dominion for the storage of milk and other liquids.



A 1,500 gallon Cheese Vat with heavy stainless steel inner vessel and steam heated water jacket. These Vats are supplied to dairy factories in capacities usually ranging from 1,000 to 2,000 gallons.



THE "MERCER MAID" copyright trade mark under which all domestic lines are merchandised.


Sink Unit
Laundry Tub
Wash Hand Basin
Laundry Tub and Cabinet
Shower Tray.
Shower Cabinet.

A SELECTION of the many modern quality lines produced from stainless steel for the homes of to-day and tomorrow.

Achievements by an engineering Company over a period of 38 years

PRECISION ENGINEERING CO LTD

76 - 79 Kent Terrace, Wellington

After distinguished service in the New Zealand Forces and later as technical and production officer of aircraft production, the late Robert Burn returned to New Zealand and laid the foundation of the present Company in 1921.

The first factory was housed in a 576 sq. ft. building in Petone. The staff comprised three men and an apprentice, concentrating on repetition machine work for the plumbing and building industries. There was a keen demand for the Company's products, which necessitated a move in 1922 to larger premises in Egmont Street, Wellington.

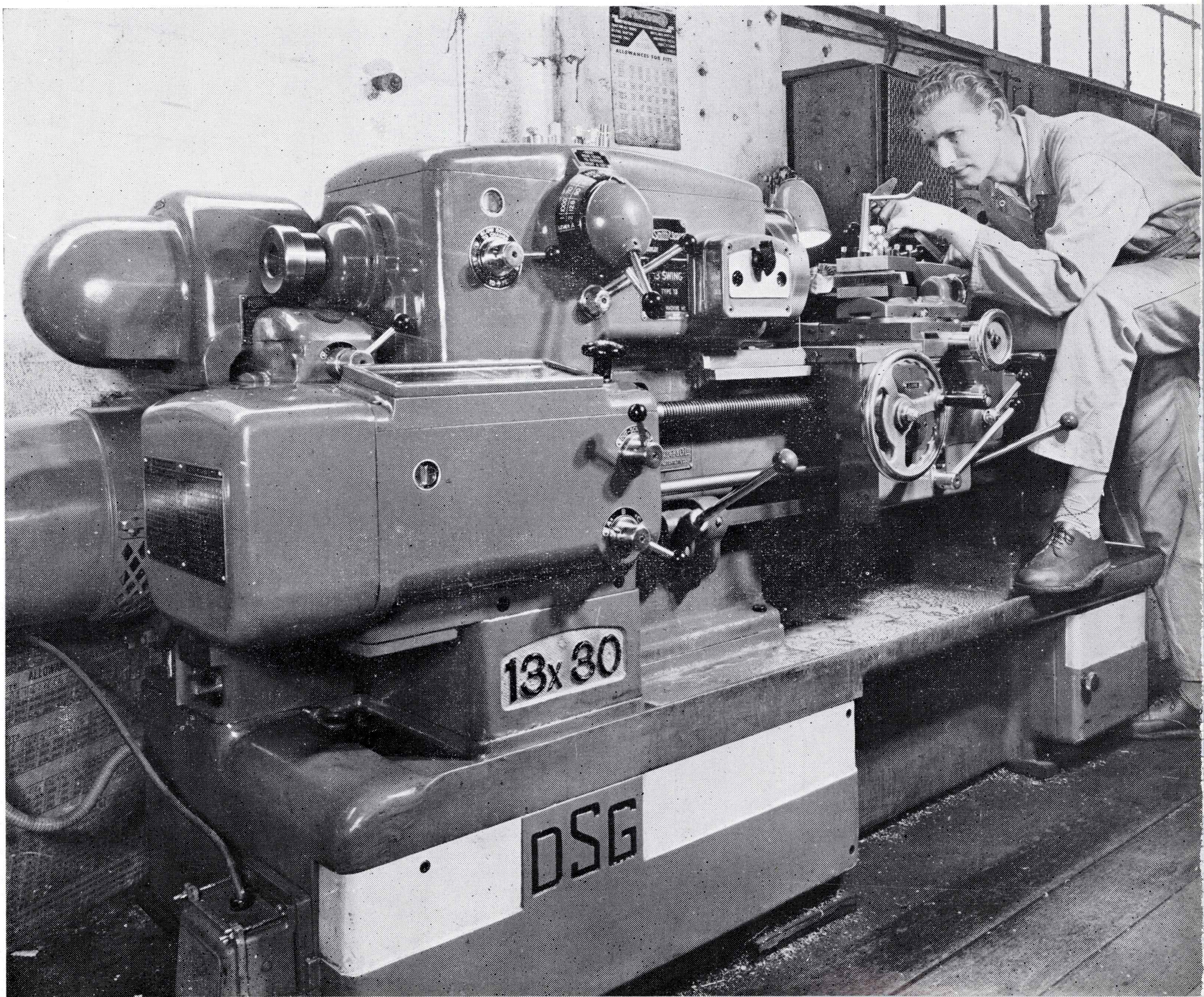
A contract was undertaken to produce milk tokens for the Wellington City Council. No suitable plant was available, however, and a special automatic power press had to be designed and built, together with the necessary dies and tools, and tokens were produced, complete, at the rate of 90 per minute.

The year 1923 saw an appreciable increase in turnover, resulting in a larger factory being purchased in Kent Terrace, where additional plant, including an up-to-date Brass Foundry and Plating Plant, was installed.

Some two years later, the Company was successful in clinching a contract for the manufacture of Motor Registration Plates. This was the turning point in the fortunes of this firm—success followed success and a stable organisation was developed.

In order to meet the contract for registration plates the entire plant was designed and built at the works. This included a 100-ton automatic power press, a complete conveyorised enamelling plant and a printing machine, along with all the dies and handling equipment. Daily output was 18,000 plates fully enamelled, wrapped in pairs and boxed (100 pairs per box) ready for delivery.

A TOOL ROOM LATHE in Precision's Wellington factory.



The first contract called for 125,000 pairs of plates. Today the demand amounts to 1,300,000 pairs. With but few modifications the plant is still in operation—proof positive of the soundness of design and workmanship in its initial construction.

Pioneers of Steel Office Equipment.

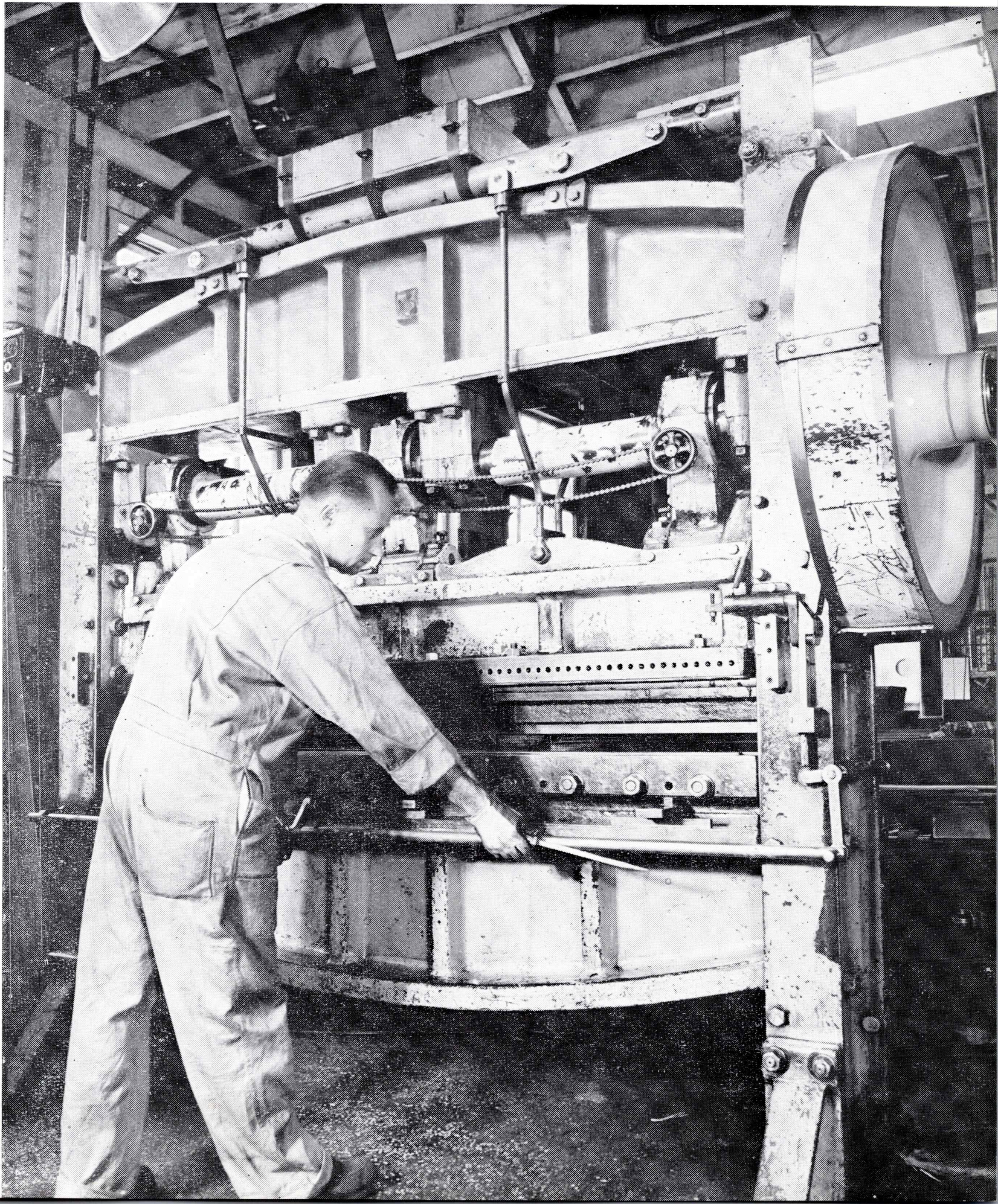
A further notable achievement has been the manufacture of steel office equipment and steel shelving on production lines. As pioneers in this field in 1926, the stage was set for the development a year later of a special press designed and built for piercing and forming the necessary components, with the end products bearing the well-known trade names Pre-V-Dex and Precision (N.Z.).

By 1929 the premises, which initially had been too large, were found to be inadequate as a result of increased production. Further land was acquired and, as part of a comprehensive building plan, a steel frame building, the first electrically welded building to be erected in New Zealand, was set up.

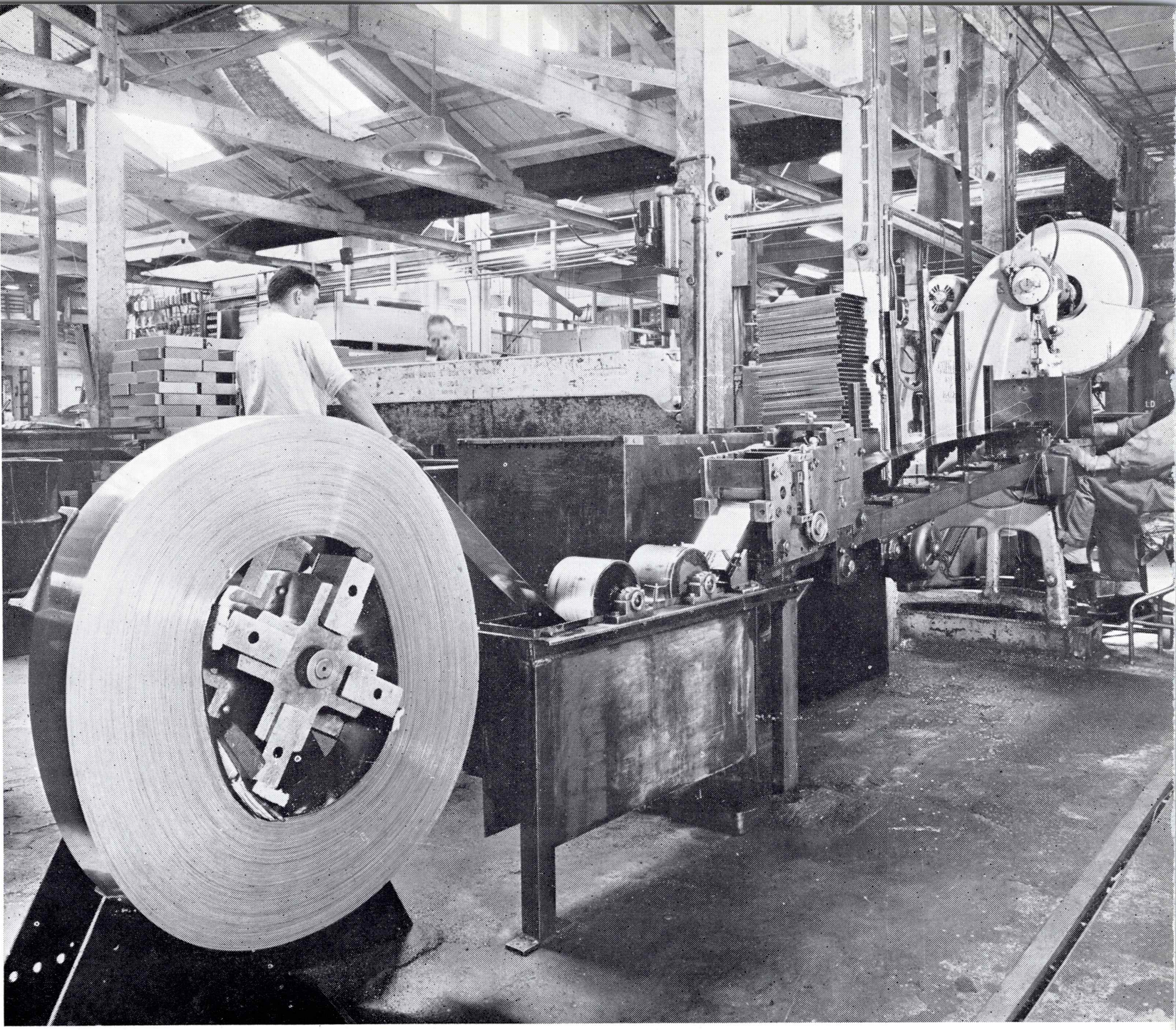
Following on the years of the depression, a full range of office furniture and equipment came off the production lines. This included library shelving and accessories, and installations undertaken were at Canterbury University and the Legislative Library.

Steel office partitions, steel doors and architraves were next on the production list of 1933. For this work a 12ft. bending brake was designed and built on the premises, capable of bending ⅛ inch steel plate 12ft long. The Napier Post Office, the State Fire building in Christchurch, and many other smaller installations were carried out.

A pre-war building boom was in progress and to meet the



AN OPEN PRESS for the piercing and bending of shelving and cabinet components, designed and built in our works.



COIL FEED AND POWER PRESS for clipping and piercing motor plates.

demand steel lift cages and doors and architectural bronze work were fabricated and installed in such buildings as the C.M.L., Prudential, Government Life, Dunedin Post Office, the State Fire building (Wellington), Auckland and Wellington Railway Stations and many others.

Contribution to the War Effort.

On the outbreak of World War II the Company's resources were thrown into the production of ammunition and other items. Three shifts per day were worked from late 1940 until the cessation of hostilities in 1945.

Generally speaking, the achievements of the engineering industry in New Zealand during the war are well known, considering the difficulties encountered due to the lack of materials and equipment. Perhaps no greater solidarity or achievement has ever before been exceeded in the country's history. "Precision" is justifiably proud of its contribution to the war effort.

Production necessitated the design and manufacture of dies, tools and jigs and, in several instances, special machines. Some 6,000,000 components for Mills hand grenades, 300,000 tail pieces for 3 inch trench mortar bombs, ring and bead sights and electric sear releases for Oxford and Harvard aircraft, 1000 Sten guns and 8,000 magazines for the Air Force, radar cabinets for the Government, 4,500 Sibley tent stoves for the American Marine Corps, bomb carrying racks for the Air Force, petrol and oil tanks for De Havilland training aircraft, three-tier storage and personnel cupboards for American troopships, and many other items for the three services and the American Army, were manufactured.

Post War Period

Between 1945-1950, the Company underwent reorganisation. The period was a difficult one and short supply of materials restricted production. When these materials became more readily available, normal production was built up and so, along with other manufacturers, the Company shared in the prosperity which prevailed.

Since that time, a flourishing business has been established, and in addition to its many and varied lines, it supplies other manufacturers with sheet steel components used in the fabrication of washing machines, petrol pumps, car radios, ironing machines, ironing boards, conveyor roller ends, etc.

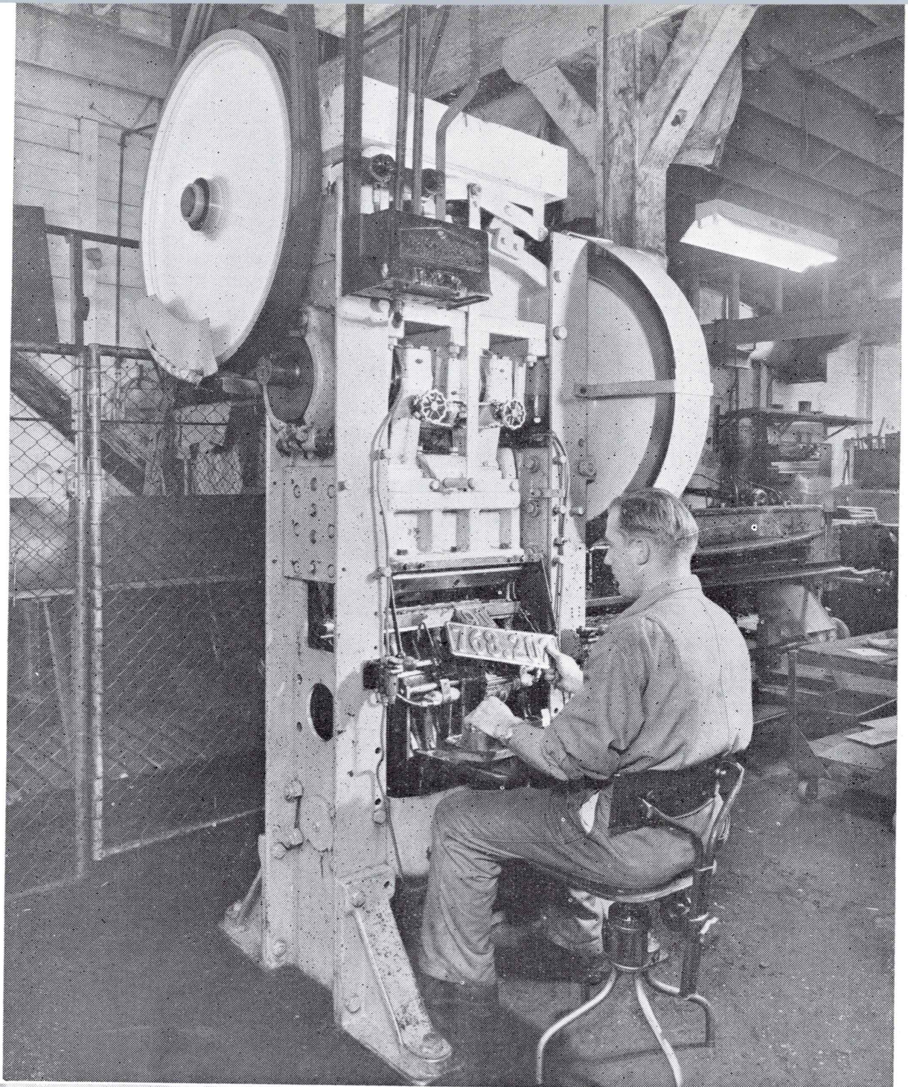
PRECISION ENGINEERING COMPANY LIMITED

The present Managing Director, Mr. C. W. Burgess, is the only remaining member of the staff to have started in 1921. Robert Burn, the founder, died in 1951 at the age of 65, and his passing was deeply felt by his staff, many friends and business associates.

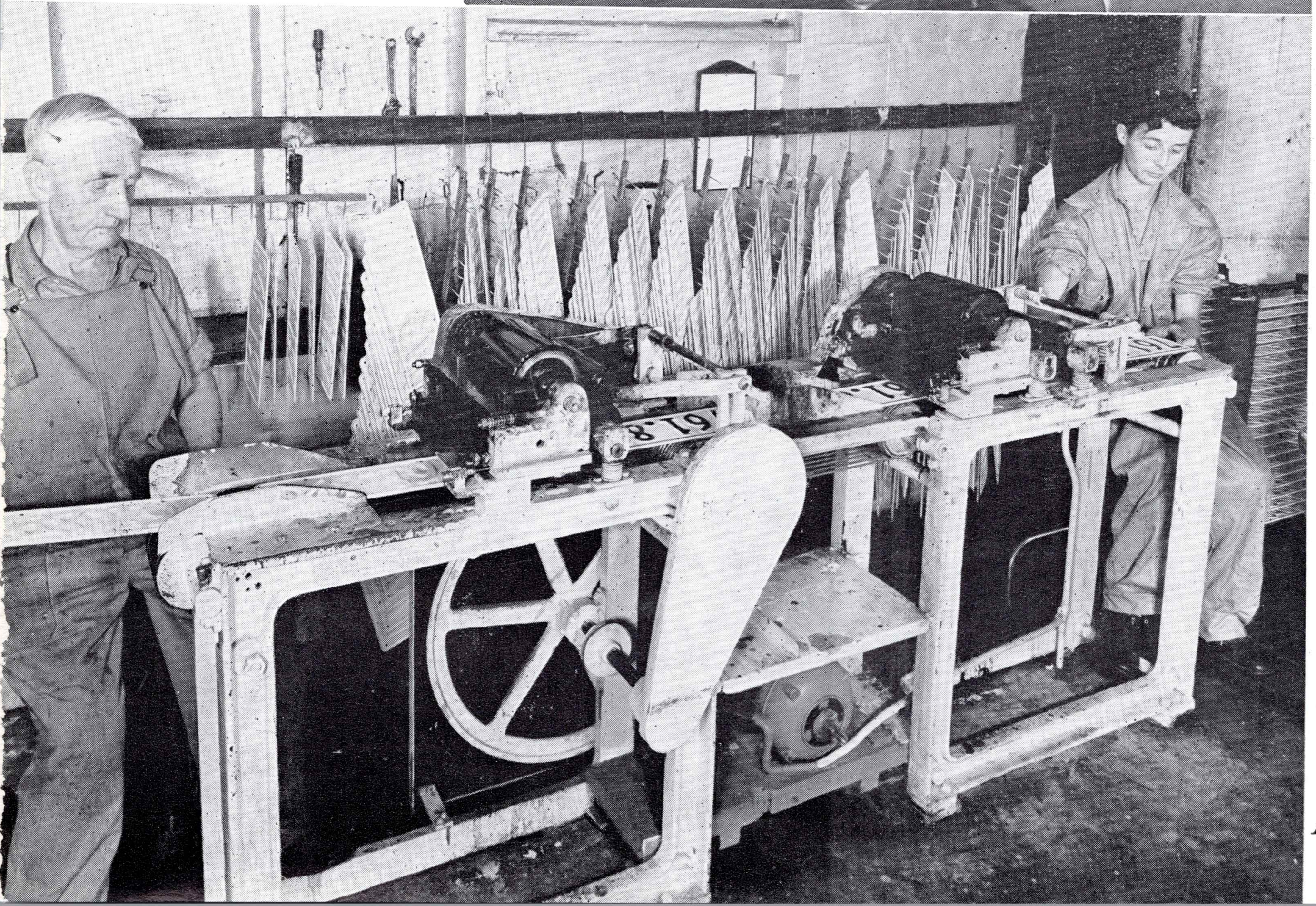
The present Works Manager, Mr. H. T. Whitcher, and Chief Draughtsman, Mr. R. J. G. Harper, both served their apprenticeship with the Company and have completed 25 years in its service. Several others have seen 21 years of service.

Mr. Burgess is convinced that secondary industry must and will expand despite the difficulties being experienced at the present time. In accordance with its far sighted policy, the Company has purchased a site, and plans are under way for the erection of new buildings, with modern and up-to-date installations.

(Right) A 100-TON AUTOMATIC PRESS for embossing motor plates.



ONE OF THE LAST STAGES IN THE MAKING OF MOTOR PLATES: Printing of the numbers being carried out.



A proud record and a permanent place in New Zealand's Building Industry

W. H. ENSTONE LTD, Aranui Road, Penrose

The company of W. H. Enstone Ltd. was formed in 1938 to manufacture a range of Builders' and Plumbers' Hardware and, since then, its products have been shipped to nearly every town from Whangarei in the north to Invercargill in the south.

From the production of a few hundred plumbers' fittings per week in a shed in Newmarket, output has increased to many thousands of hardware items weekly in the Company's 20,000 sq. ft. factory erected in 1951 on a two-acre site at Penrose.

When import restrictions came into force in 1939 it was decided to make a complete range of plumbers' brass fittings and automotive brass pipe fittings. Demand invariably exceeded the supply of the finished article, but extruded brass rod imported from Great Britain remained available to the trade.

At the outbreak of war, W. H. Enstone had on order from Germany what would have been the first pressure diecasting machine in New Zealand. This order was cancelled and subsequently one was imported from the United States. This machine, operating day and night, proved to be invaluable to the war effort in New Zealand.

The Government of the day was approached regarding the production by Enstones of small arms, but the offer was turned down. Later, that Government made representation to the Company to fulfil an order for 11,000 Sten guns.

The Company had available the only rifling machine in New Zealand. The inside of hundreds of rifle barrels, from which 7in. lengths were cut, was torn out and re-rifled to suit the type of ammunition available. Some 90,000 pieces including breech blocks, etc., millions of centre pieces for hand grenades, and filler hole plugs were processed by a staff of 150 women working in three shifts. Production was streamlined and multiple diecasting became the order of the day.

At the present time, the Company operates three pressure diecasting machines suitable for aluminium or zinc based alloys, two power plastic machines, and a complete electroplating plant covering copper, brass, bright nickel and chrome plating. These machines have enabled the industry to maintain its huge output and to identify itself with large State housing projects.

The trend has been from plumbers' hardware to builders' hardware. The Company was the first in New Zealand to produce a mortice latch and a plastic door-knob. Some of the items made over the last 10 years bearing the now well-known "Enstone" label are:

Window Fasteners, 800,000 sets; Mortice Latches, 600,000 sets; Door Handles and Plates, 1,000,000 sets; Hat and Coat Hooks, 700,000; Towel Rail Brackets, 400,000; Washing Machine Parts, 250,000; Refrigeration Parts, 500,000.

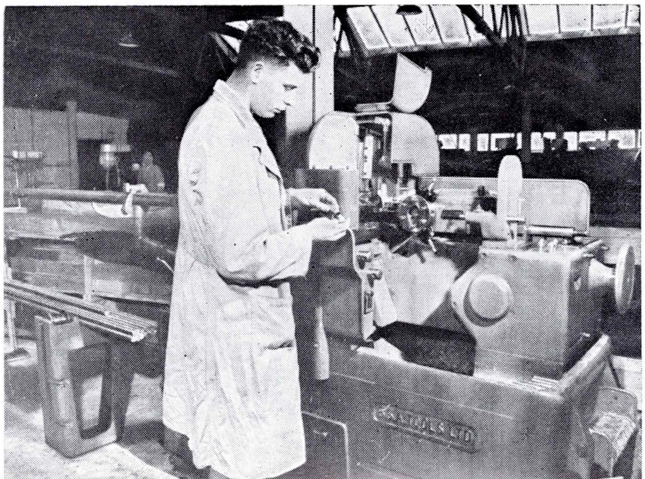
Service and satisfaction and a quality hardware product have earned for the Company an enviable place in the building industry of New Zealand, and its policy will continue to develop along these lines. Rejects are negligible. Attractive polythene bags—emphasising the 'Enstone' trade mark — containing casement stays, screws, etc., keep the organisation abreast of the times. They are acceptable to the builder, merchant and retailer alike.

The Company has swung over to many branches of production aiding manufacture in New Zealand generally. As the pioneers of zinc diecasting in this country — this is evidenced by their output of washing machine and refrigeration hardware (wringer gears, aluminium drain pumps complete, refrigerator name plates, refrigerator locks by the thousand for commercial purposes) — the Company is competing on an open market with Great Britain and Australia without tariff protection, notwithstanding the fact that an export duty is placed on zinc imported from Australia, whereby the manufacturer in this country is protected.

The present demand for builders' hardware has risen steadily since import control has been in force. Consequently the Company has not embarked upon any export programme. Needless to say, enquiries have been received from the Pacific Islands and from as far afield as the Gold Coast and Nigeria. These enquiries can only be attributed to the high standard of quality and competitive price of the "Enstone" product.

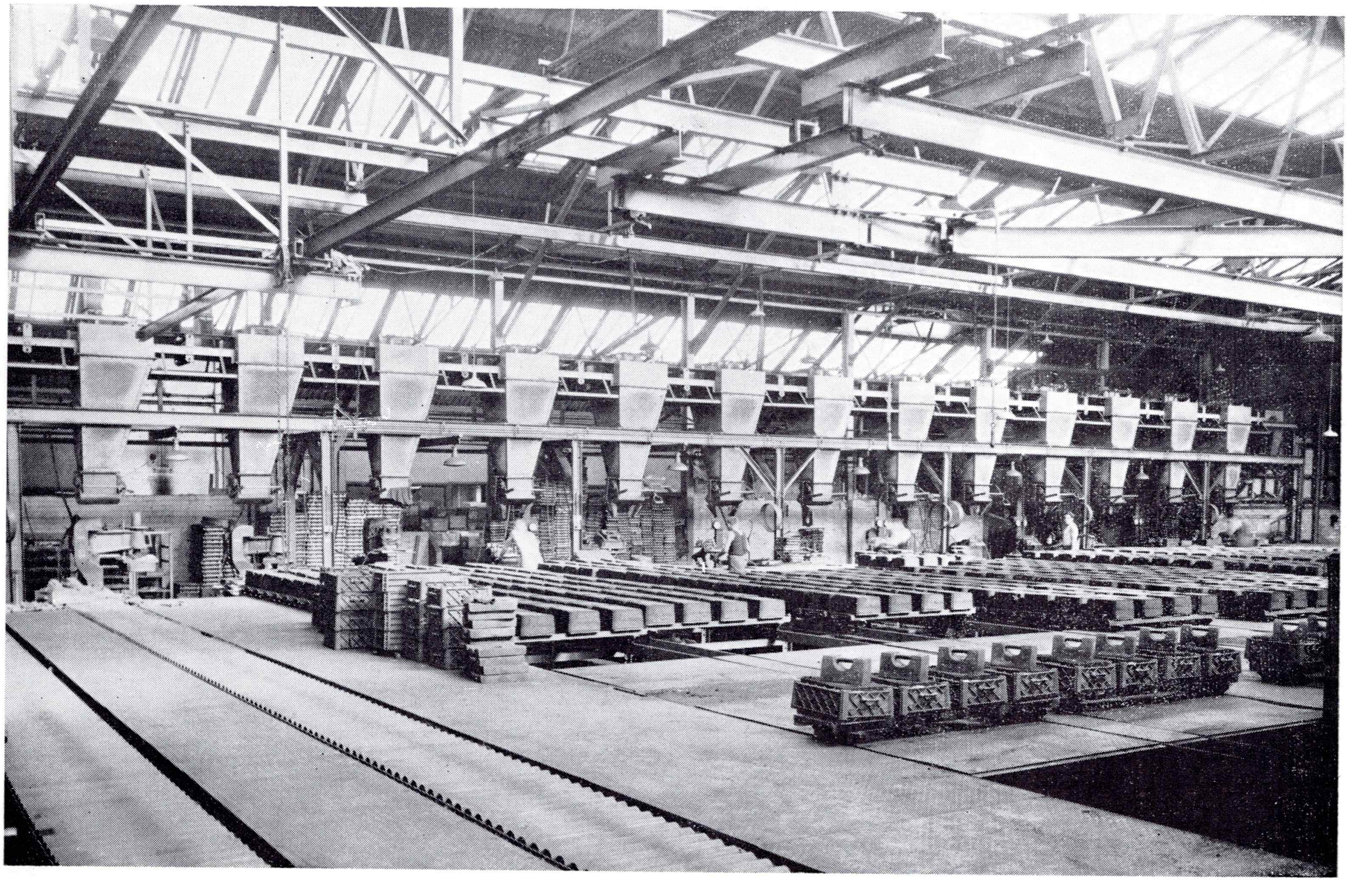
ONE OF THE THREE large diecasting machines.

CHECKING ACCURACY on automatic lathe.

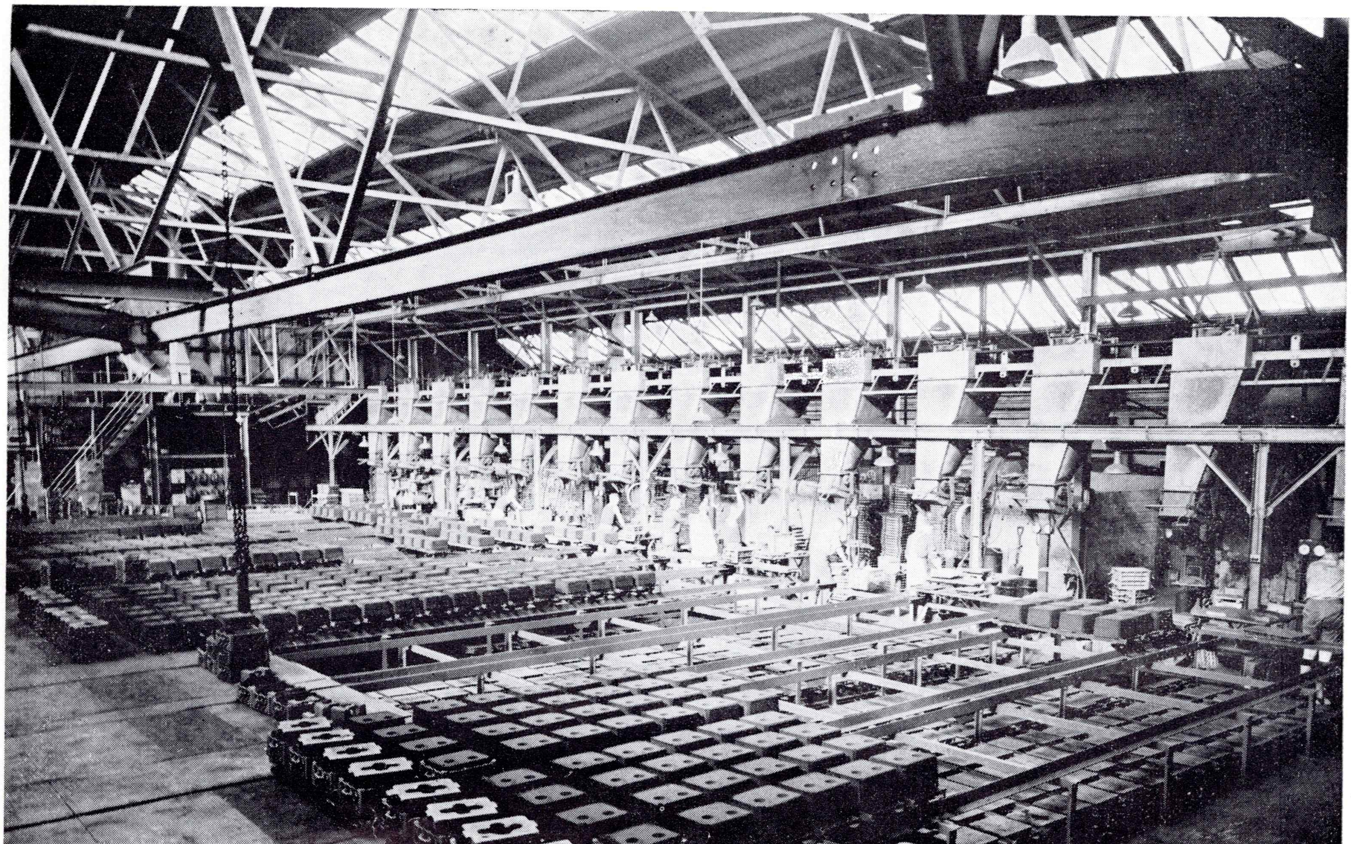


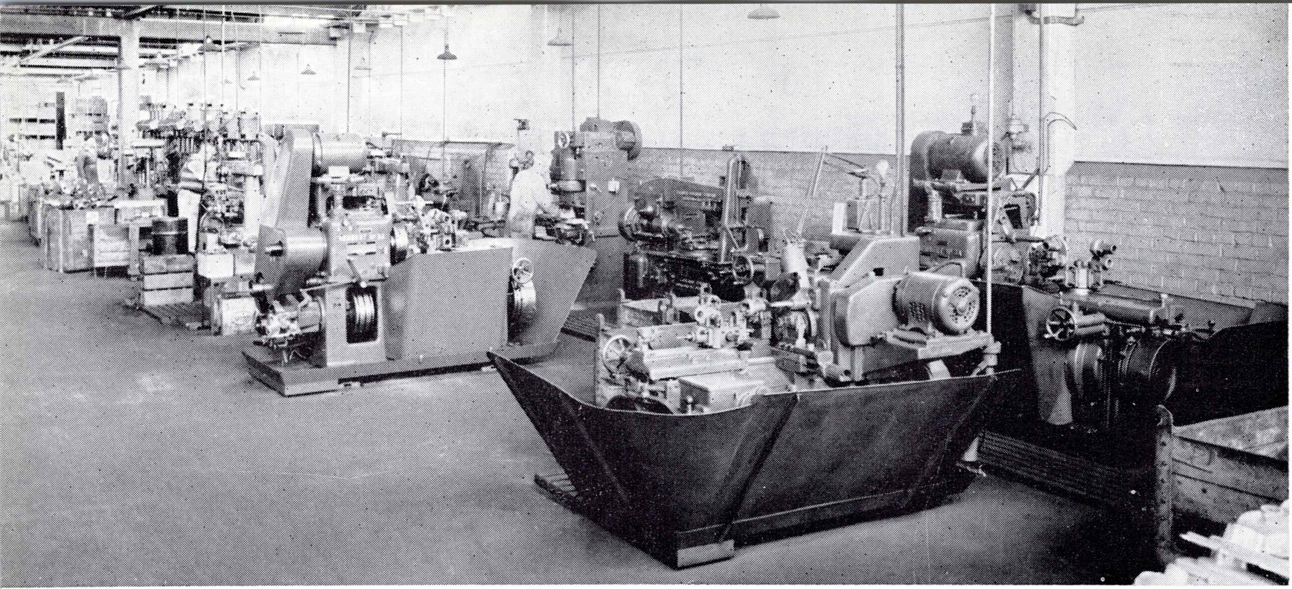
MASON & PORTER LTD

Mt Wellington, Auckland



TWO VIEWS OF MASON & PORTER Ltd.'s fully mechanised foundry, Mt. Wellington.





AUTOMATIC LATHES and gear cutting machines.

When two young New Zealand engineers returned to their homeland in 1910 after spending a period abroad to widen their experience, they little realised that the modest engineering business they then commenced would, within half a century, grow into one of the largest and most progressive manufacturing plants in the Dominion.

Keynote of their success was an ideal which influenced everything they did—an unswerving insistence on quality before anything else—which gradually won for their trade-name, 'Masport', a reputation for the very finest and best in engineering workmanship. About the time they commenced business, the first experimental milking machines were just being developed, and they steadily built up a connection in this new industry, which has lasted until today. Probably more than 75 per cent of the dairy herds in this country are milked with "Masport" Vacuum Pumps, of which five low speed and five high speed types are manufactured. A sizable export business is being built up with the U.S.A. at the present time.

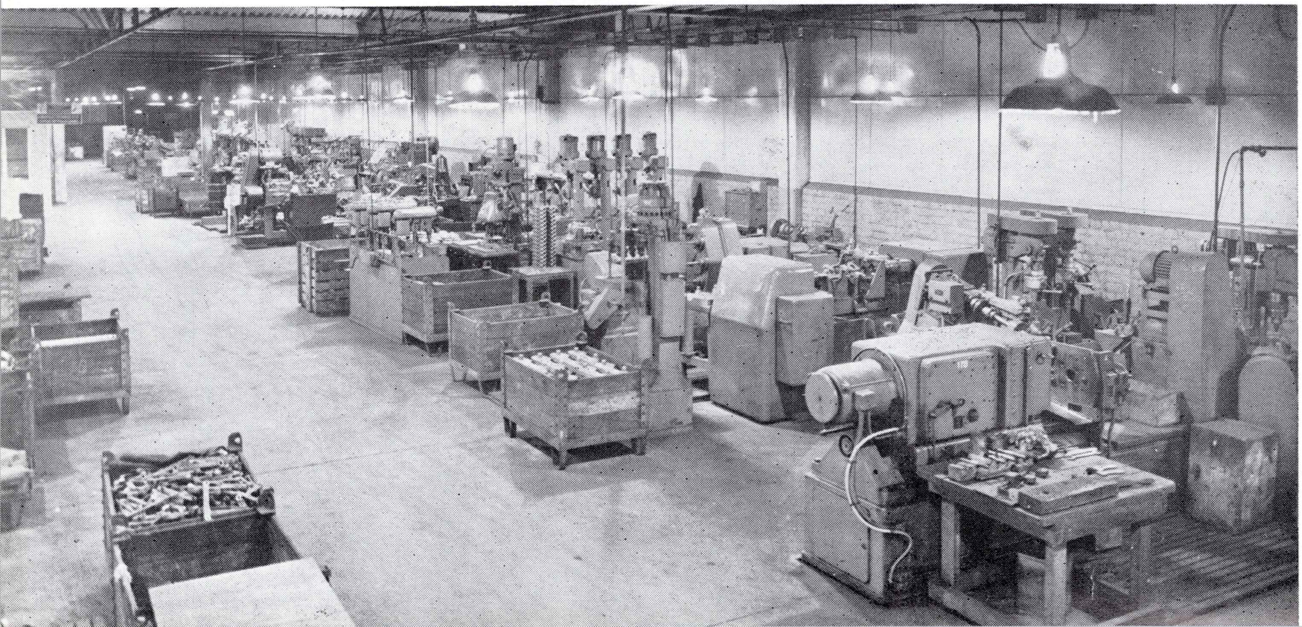
While still only a small unit in the early '20s, the Company embarked on a very ambitious programme of engine design and manufacture, with quite amazing results. Among the engines produced was a 4-cylinder o.h.v. marine unit which drove the "Miss Masport" at the astounding speed of 31 m.p.h.—a world-class performance at the time. Production progressively concentrated on a single cylinder stationary engine for farm use, and it is worthy of note that some of these are still running after 30 or more years of use.

Owing to the difficulty in obtaining a consistent quality of castings, the firm decided to establish its own iron foundry. In applying the same progressive outlook and exacting standards, it soon came to the forefront as leading producers of close-grained, fine-finish castings that were sought after by other manufacturers. Later, the foundry was extended to produce non-ferrous and malleable iron castings as well.

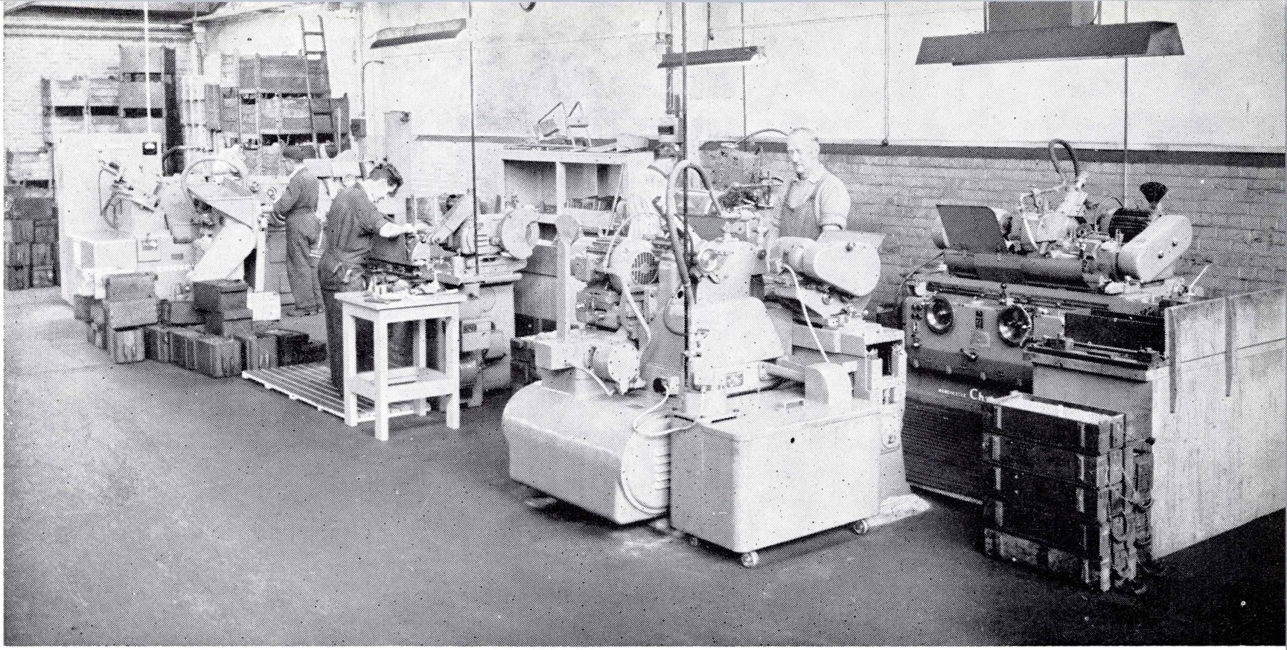
The challenge of the depression days of 1930 was met with a further pioneering venture—the manufacture of "Masport" Lawnmowers—which offered opportunity to apply overseas mass production methods on a more extensive scale. Greeted with prejudice, opposition and even ridicule, these lawnmowers soon came to be accepted as superior to most imported machines and in recent years have practically ousted them from the local market under conditions of free competition.

Expansion and Automation

By 1938, the factory at Parnell was so over-taxed that a 15-acre property was purchased at Mt. Wellington to erect a new plant which would provide plenty of scope for the steady expansion that had become a normal feature. This proved most timely, as it facilitated a switch-over to war production on an extensive scale, long-term development plans being merely accelerated as occasion demanded. Millions of hand grenade casings, as well as a wide range of other munition components



A SECTION OF THE MACHINE SHOP where components for washing machines are produced. The machines in the foreground were constructed in the Company's toolroom.



PRECISION GRINDING on the latest automatic sizing plant, which is capable of controlling dimensions to .0002″.

and military equipment, were produced in its factories over the war years.

Since then a further transformation has taken place in the layout and manufacturing methods employed, to take advantage of the most modern mass production techniques. The foundry has been completely mechanised and is as up-to-date as any unit of its size to be found anywhere in the world.

In the machine shop automation has been introduced with effective savings in cost. It is interesting to note that in 1935, a hand lawnmower was worth approximately one week's wages, whereas today a better machine can be purchased for half a week's pay, thus making a substantial contribution to the general standard of living.

In addition to the range of "Masport" products, Mason & Porter Ltd. contributes to the manufacture of many other well-known articles in the home-appliance field in addition to agricultural, dairying and sheep-shearing machinery.

A visit to this Company's works, with a floor area of 100,000 sq. ft., is almost a bewildering experience. Here is no murky gloom of the traditional foundry, but a bright lofty structure, full of labour-saving machinery, conveyors and other automatic equipment. Even the atmosphere is kept clean and healthy by a complicated system of dust collectors and trunking that removes all dust at its source and converts it into a harmless sludge.

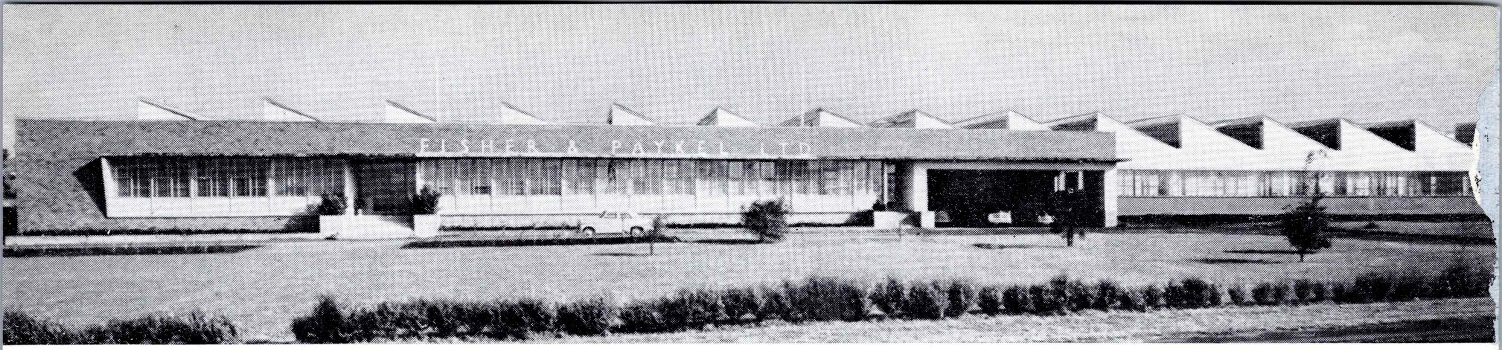
The machine shop, with 75,000 sq. ft of floor space, is rather like a section of a machine tool exhibition, so impressive is the orderly array of modern high-class machines of leading makes, many of which are automatic in their operation. Not the least impressive feature is the number of special-purpose tools and ingenious devices designed and built in the Company's own workshops.

This is the type of factory that fills the visitor with a sense of pride in the initiative and achievement of New Zealand industrialists and craftsmen, and, along with the conviction that manufacturing here has really come-of-age, there is left a feeling of great confidence in the future of our growing engineering industry.

THIS SIDE UP
Masport
"ROTACUT"
SUPER GRADE MOTOR MOWER

MOTOR MOWERS being packed ready for despatch.

Photographs: Sutcliffe Photography



Fisher & Paykel's Factory at Mt. Wellington.

Manufacturers of Electric Home Appliances

FISHER & PAYKEL LTD

Offices: Upper Lorne St Auckland
Factory: Mt Wellington Highway

Home appliances have made a notable contribution to the high standard of living which New Zealand enjoys. The extent of their use is comparable with that of any country in the world. Only a small minority are imported and, consequently, the manufacture of home appliances has become a major industry in this country.

Fisher & Paykel Limited, whose head offices are at 66 Upper Lorne Street, Auckland, is the largest producer of electrical home appliances in New Zealand. The company was originally established over 25 years ago, as importers and distributors in this field. As sole New Zealand agents for famous American brands of refrigerators and washing machines, it played no inconsiderable part in introducing these appliances to New Zealand housewives, and in promoting general acceptance of time- and labour-saving equipment in the home. The advantages of refrigerators and washing machines and of other electrical home-aids gradually came to be understood and appreciated; in the years immediately before the war, demand grew steadily and, so far as Fisher & Paykel were concerned, even tended at times to outrun available supply.

The adoption by the Government in 1938 of a policy of controlling imports by licensing created an immediate problem for Fisher & Paykel Ltd. as the company was trading principally in appliances imported from the U.S.A. As dollar imports were even more restricted by the new system of import control than those from sterling sources, it became necessary to find alternative means of meeting a demand already barely filled and steadily increasing. The alternative was to produce the necessary appliances within the country and so, in 1939, Fisher & Paykel entered the manufacturing field.

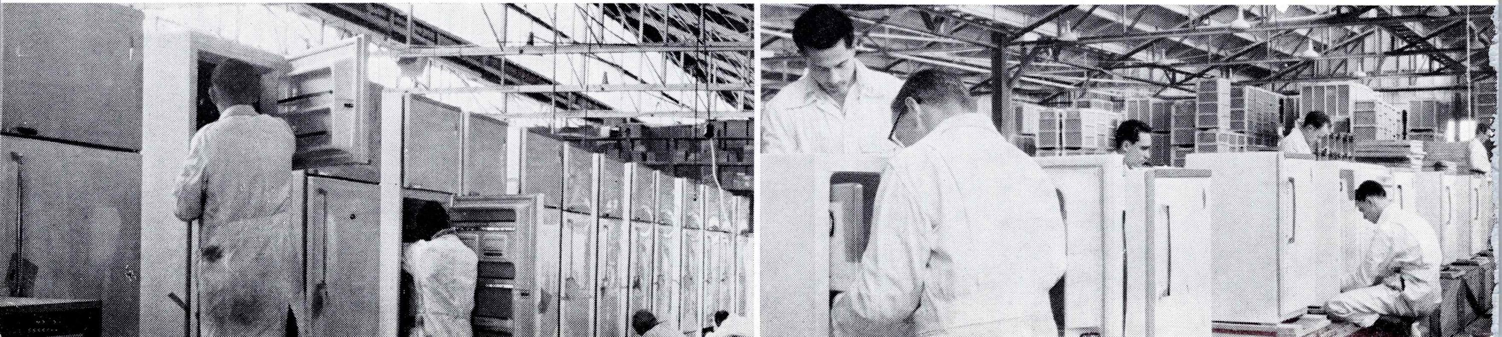
Location of Fisher and Paykel's headquarters, Auckland.

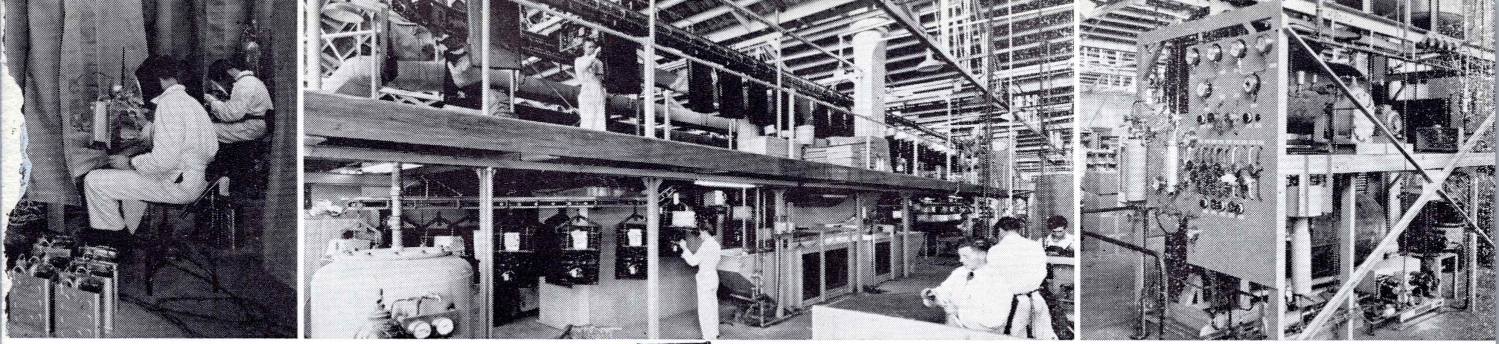
The cabinets for some refrigerator models were already being made in New Zealand, but the first complete appliances produced were electric washing machines. Since then, notwithstanding the gap of the war years, the firm has manufactured in its Auckland factories no less than 210,000 of various models and types of this basic home appliance. Design has always been assiduously kept in line with developments and improvements in overseas countries. Today, the company's washing machine production ranges from standard agitator-cum-wringer machines to semi- and fully-automatic tumbler washers, all types being available with or without incorporated heating elements. These washers are comparable in every respect with overseas models.

More extensive refrigerator manufacture followed closely upon the production of washers. The models manufactured were exact reproductions of those of a famous American manufacturer. The range of models has grown to include capacities up to 14 cubic feet, as well as home freezers and commercial display cabinets of even larger sizes. To meet the demand for increased low-temperature space in the home, the company has lately developed a range of 2-in-1 refrigerators, which combine both normal refrigerator and home freezer in the one cabinet, with a separate door for each compartment in some models. The company has also a substantial annual output of commercial freezers and industrial refrigerating equipment.

The manufacture of vacuum cleaners was a natural extension of Fisher & Paykel's appliance manufacturing and this was undertaken early in 1948. It involved some new kinds of manufacturing, in particular the production of the compact, high-speed electric motors

Kelvinator "Foodarama" and "Benchline" refrigerators, the largest and the smallest of the Fisher & Paykel range.





(Left) Welding aluminium evaporators. (Above) Motorised 2-decker sealed-system assembly line. (Right) Charging sealed-systems with refrigerant.

with which its vacuum cleaner was powered. This motor proved to be of such quality as to enable the company to support the sale of its product by the issue of a five-year guarantee.

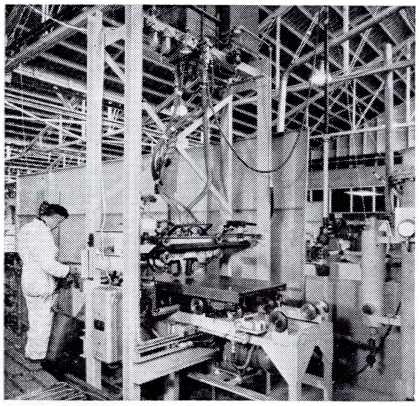
All these appliances were made in New Zealand under manufacturing licences granted by the same world-famous overseas companies, American and English, whose products Fisher & Paykel had previously imported and distributed. Henceforward, these licensors regularly provided the New Zealand company with designs, manufacturing and technical information. This has made it possible to keep local methods and processing fully in line with those which had proved their worth in the world's leading appliance factories. New Zealand factory workers showed themselves able to exploit this assistance to the full.

The result of these manufacturing agreements has been that home appliances bearing world-famous names — Kelvinator, Leonard, Goblin, Bendix, Launderoll, Hoover, Remington — are not only as freely available in New Zealand as they are in their respective countries of origin, but are made in Fisher & Paykel's Auckland factories to the same standards of quality and workmanship as their overseas counterparts. Their brand-names guarantee their inbuilt quality and operating efficiency in New Zealand as elsewhere.

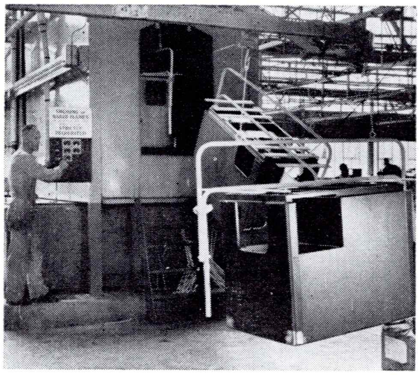
The full list of electrical appliances currently made by Fisher & Paykel covers not only refrigerators, home freezers, washing machines and vacuum cleaners, but also electric clothes dryers, electric dishwashers, electric cooking appliances and electric irons. In the factories of associated companies are made a variety of other appliances, from electric ranges, standard and automatic, to electric shavers.

Fisher & Paykel's principal factory at Mt. Wellington comprises a modern industrial building, covering 133,000 square feet, specially designed for its present use, with provision for future extension. It is sited on an area of 12½ acres, the unbuilt area being in lawns, playing fields and two carparks accommodating 200 cars. Included under the same roof is a design engineering and research building of two floors, which provides office accommodation for executive engineers and their staff, as well as drawing offices and laboratory.

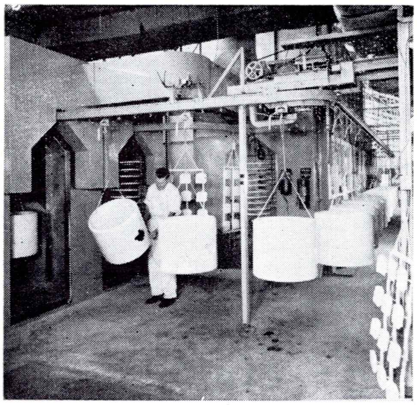
The factory is so planned that all movement of goods is from west to east, from the inwards goods section at one end of the factory to the outwards section at the other. The flow of parts production is towards the various assembly lines, each allocated to a particular appliance, all arranged in parallel, and so located that, when appliances, completely finished and crated for despatch, reach the end of the assembly line, they are virtually on the outwards truck-dock.



Manufacturing refrigerator condensers.

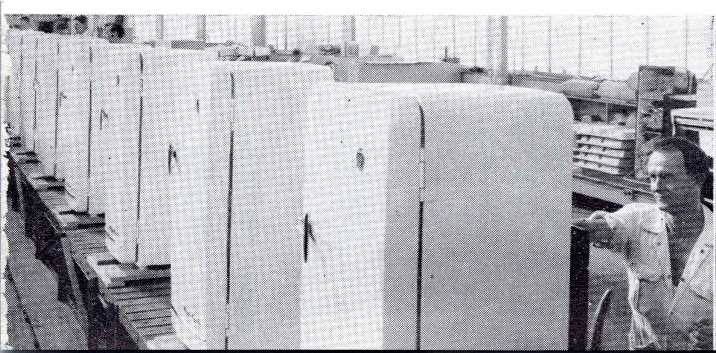


Home freezers are carried on chain-conveyor through degreasing tunnel.

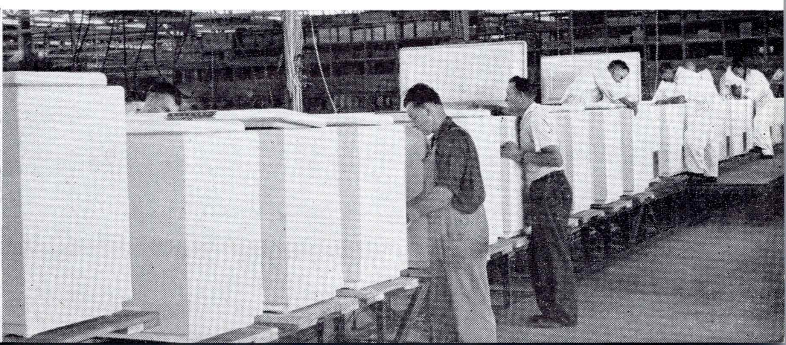


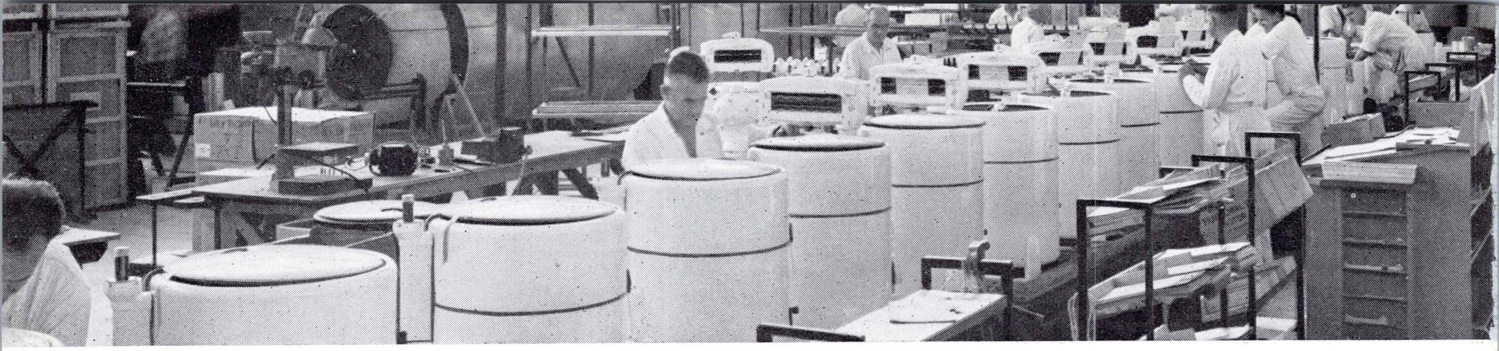
Washing machine bowls move from Paint Shop to drying ovens.

Assembly line for the popular 6 cubic foot refrigerators.



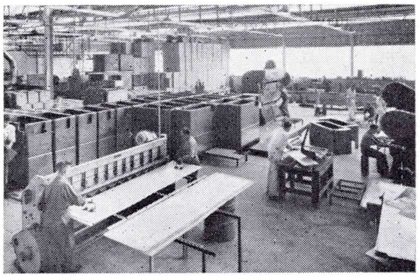
Home freezers on the assembly line.





Production of wringer-type washing machines has reached 150 per day on this assembly line.

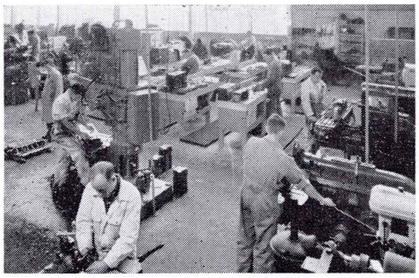
Manufacturing is divided into various sections, each devoted to the production of certain component parts or to special kinds of processing and finishing. Some components which involve highly specialised manufacture are supplied by sub-contractors. Some few, more specialised still, or requiring for economic production a much higher output than local requirements could absorb, must be imported as, of course, must also the bulk of raw materials. Production is to so large an extent dependent upon the availability of materials that the supply division plays a critical role.



Home freezer cabinets in Sheet Metal Shop.

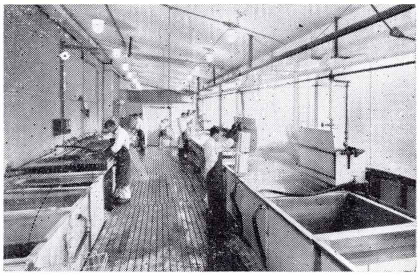
The production of so varied a range of appliances calls for close factory organisation. In order to provide the necessary direction and control, the plant manager delegates direct control of many activities to sub-managers and supervisors. Production planning is done by a group of office and factory executives, since it requires market knowledge as well as manufacturing experience. Heads of manufacturing divisions plan their own activities to fit in with the overall programme. Costing is entrusted to the constant care of a specially trained section. The supply manager and his staff handle the procurement of materials from overseas, arrangements with sub-contractors for the supply of items involving specialised production, and the scheduling of deliveries to correspond with the general production programme. The personnel officer is responsible for maintaining staff at the required level and for their general welfare. Methods of work and operating procedures are constantly checked and revised by a specially qualified methods engineer.

This detailed organisation provides the materials, staff and general direction necessary for efficient and economic production, but it cannot of itself manufacture a single nut or bolt. Actual manufacturing — what and how — is determined by the designing and executive engineers.



A view of the Tool-making Shop.

It is, of course, one thing to receive design drawings of an overseas appliance, accompanied by processing recommendations, but it is entirely another to manufacture it. It must first be determined whether the overseas design is in every way suitable for local needs and conditions. If not, necessary modifications must be decided upon. Responsibility for these determinations falls upon the design engineer. The further preliminary work of detailing the manufacture of each part, of determining processing and finishing procedures of making provision for dies, tools and other necessary equipment and of doing the general planning for assembly-line production of the appliance is also the responsibility of the factory's design and engineering division, a responsibility which is merely begun by the construction of a prototype and does not end until the appliance is coming smoothly off the assembly line.

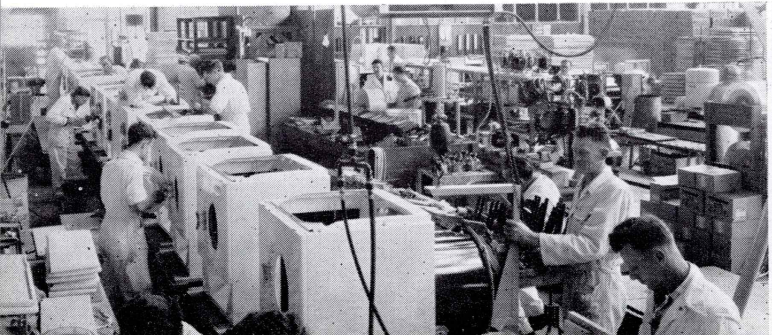


Chrome-plating and anodising Shop.

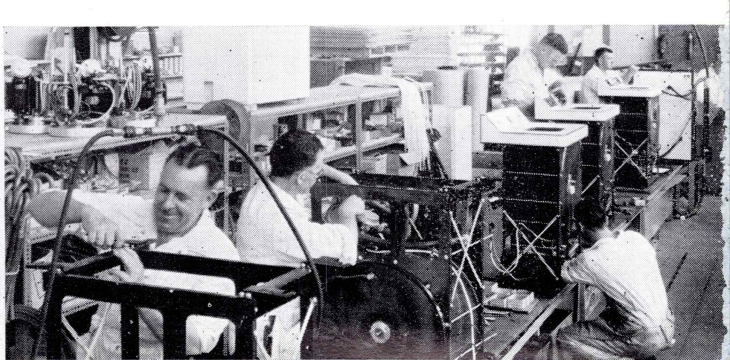
The production of the necessary press and other manufacturing tools falls on the factory's own tool-making shop. Its engineering staff, skilled in this precision work, make the majority of the jigs, tools and dies required, although some dies of unusually large size have to be sought elsewhere.

The press shop of this factory turns out a great variety of work, from wringer parts to home freezer cabinets. It does, in fact, make some items for every type and model of appliance made in the factory. Mainstay of this well-equipped department is a 300-ton Toledo press, made unusually versatile by the use of ganged press tools, which

Bendix Automatic Washers on the assembly line.



The assembly line for Launderoll Washers.

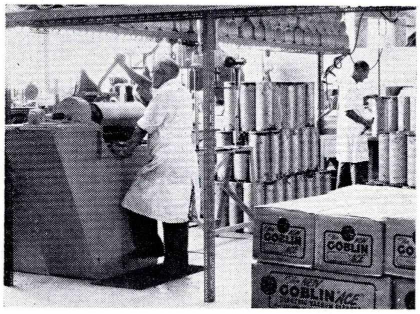


Testing vacuum cleaners.

Making and assembling vacuum cleaner motors.

enable it to perform 8 or more operations at each stroke.

The factory's paint shop is an up-to-date and fully mechanised combination of degreasing, cleaning and drying tunnels, preceding the spray-painting booths, with a baking tunnel succeeding it. Its conveyor system is adaptable for a wide variety of articles from the largest to the smallest, all remaining on the conveyor through every stage of finishing. Other finishing, particularly of external parts and ornamental trims, in steel, copper or aluminium, is done in the plating and anodising shop.



Manufacturing vacuum cleaner cylinders.

In the vacuum cleaner division of the factory, production ranges from the manufacture of the laminated cylinders to the winding of stators and rotors for the high-speed motors which, applied to the specially designed two-stage fan, give the company's famous cleaners their unsurpassed suction. Standards of inspection in this division are unusually rigid. The company could not otherwise afford to give its unique five-year warranty on the product.

A special manufacturing section produces the sealed systems for refrigerators and home freezers. Here the motorised assembly line takes a two-decker form in order to keep the whole installation compact and conveniently workable. The refrigerator evaporators and the condensers are fabricated on the ground floor at the beginning of the line and are thereafter integrated with the compressor. The whole refrigerating unit is completed, checked for sealing, charged with refrigerant and tested for operation in the course of its journey through the upper circuit and down again to the ground floor.

Stocks, whether of raw material or manufactured goods, are divided in this factory, and located for maximum operating convenience. Apart from reserve bulk storage, there are three stores. The engineering store holds raw material and servicing stocks for the engineering and toolmaking, electrical and maintenance sections, and is adjacent to all three. The production store holds stocks of manufactured components in a position close to the starting ends of the assembly lines.

Automatic winding machines for Goblin vacuum cleaner motors.

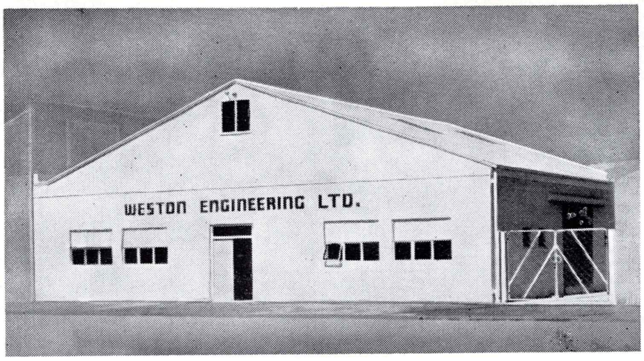
In the spare parts store, so located that it is accessible by a separate entrance on the north side of the factory, are held stocks of replacement parts, not only for current appliances but also for superseded models. The spare parts division plays an important role in enbling the company's appliance retailers to give prompt service even to vintage models of its products. With so many appliances, each with many old and new models, and each model with up to fifty or more replaceable parts, the maintenance and control of spare parts stocks is a complicated business, but it is here efficiently accomplished by the adoption of the most modern methods of stock-keeping and the use of the latest electrical machines for stock recording and accounting.

Factory cafeteria.

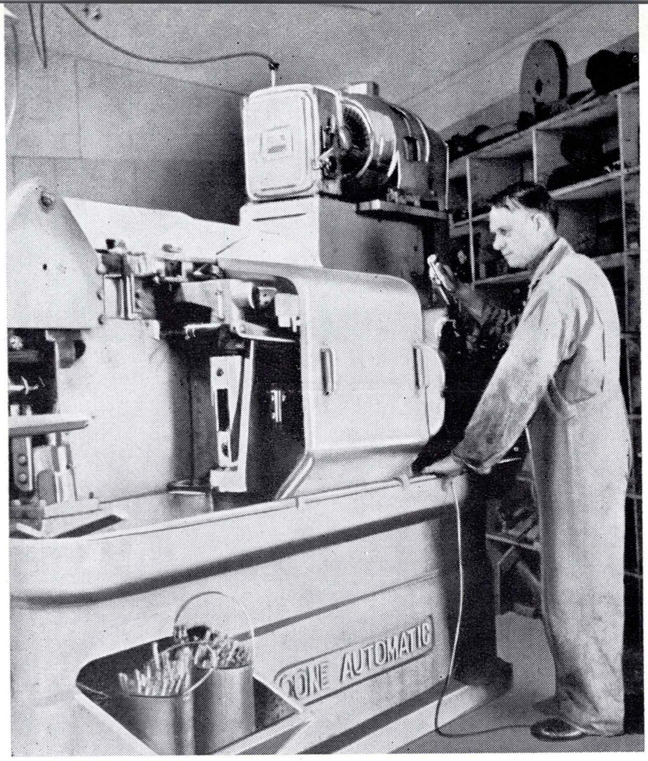
From Fisher & Paykel's factories will come in the next 12 months close on 100,000 electric appliances — refrigerators, home freezers, washers, clothes dryers, dish-washers, vacuum cleaners, cookers, irons, electric shavers — and in this manufacturing and distributing there will be engaged just over 500 employees of the company and many hundreds more in sub-contracting firms.

An exhibit representative of the manufacturing range of Fisher & Paykel Ltd.

Whiteway
FISHER & PAYKEL LTD.
KELVINATOR
WHITEWAY
BENDIX
LEONARD
GOBLIN
ROTO-CHEF



THE NEW FACTORY RECENTLY OPENED IN NAPIER.



A MULTI-SPINDLE Automatic Machine.

Experience, specialised knowledge — progressive policy

WESTON ENGINEERING LTD

Dannevirke & Napier

The Company's activities in the manufacturing field were initiated by wartime needs — production for mobile war units and military equipment—requiring precision repetition work. These parts were made mainly in steel and brass from bar stock on normal machinery especially adapted for the required purpose.

Post-war activities of the Company led to a continuation as manufacturers of machine components to makers in domestic appliance and industrial spheres. Standard lines of case-hardened square-head setscrews, hexagon head cap screws and heat-treated slotted grubscrews were produced.

The present organisation began production in 1953 as an off shoot of Bell Weston Ltd. (Manufacturing Department), which Company was primarily connected with the automotive trade.

Reorganisation, under the guidance of Mr. H. S. Weston, M.I.Prod.E., led to a factory being built at Dannevirke and, recently, a second factory has been erected at Napier. In the latter establishment, the foundation has been laid in comprehensive equipment for interchangeable part manufacture.

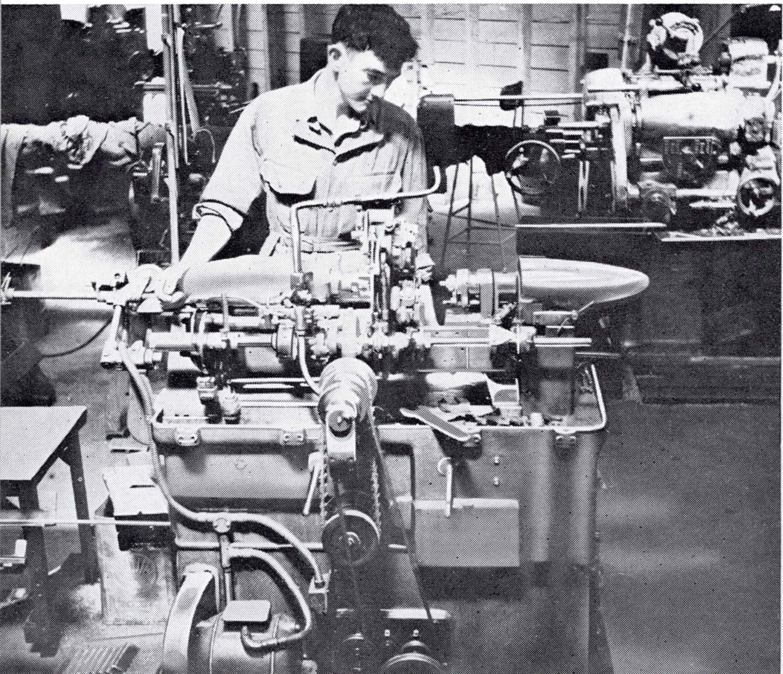
The production of machined parts from bar material is the firm's specialty. In this connection it operates automatic screw machines graduated in size from heavy multi-spindle units to single spindle automatics and to the light sliding head type. Several of these machines are equipped for slotting screws and, for all of them, additional equiment has been obtained with the object of versatile production. A useful capstan section supplements the automatic plant. Auxiliary machines for drilling, tapping, precision grinding, automatic milling, where such work is called for in secondary operations, have been installed.

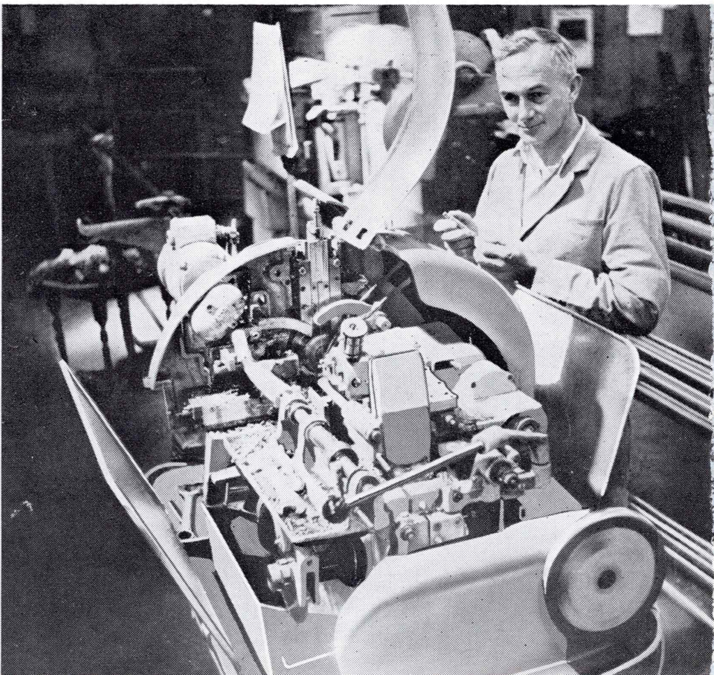
A considerable quantity of the output of the plant is heat-treated, for which purpose salt-bath furnace equipment is used. In this section carburising and heat treatment of carbon and alloy steel products are dealt with by skilled operators using adequate control apparatus during the process, and for hardness tests.

Bright mild steel in rounds, hexagons and squares constitute the main raw material used by this Company. Extensive stocks are held; direct purchase is made from the mill. Quantities of alloy and carbon steel, in commonly used sections and sizes as determined by demand, are also stocked in addition to aluminium and brass rod.

Directors: C. L. Weston (Works Manager), M. L. Weston, H. S. Weston, M.I.Prod.E. (Manager).

(Below) A SLIDING-HEAD Precision Automatic and (right) a B.S.A. Single spindle high speed Automatic.

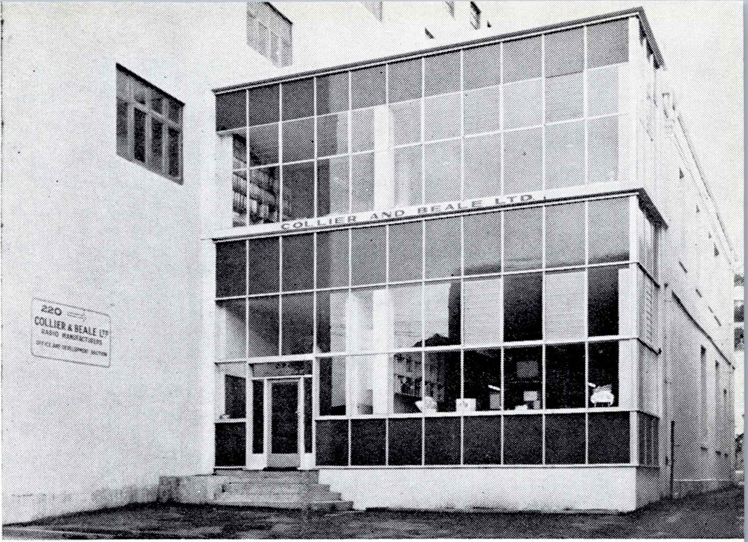




Accent on quality and technical excellence

COLLIER & BEALE LTD

220 Willis St and 66 Ghuznee St
Wellington



HEAD OFFICE and Design Department of Collier & Beale Ltd.

In 1926 two electrical men, Percy C. Collier and Gordon H. Beale, set up a business which was, through their unstinting efforts, destined to set a standard for the now significant radio industry. Early years were spent on designing and building battery radios, "talkie" sound systems, transformers, etc. A milestone was the construction of radio station 2ZW in 1928.

Radios made in the pre-war days—before any import protection—exhibited exceptional performance through infinite care with every detail.

Wartime production absorbed the full energies of the Company and resulted in the fast delivery of the most complex radio equipment ever made in New Zealand. This ranged from tiny packsets to 1KW transmitters and the mighty CH and CD radar. The well-known Army set ZC1 Mk. 1 was designed by the Company and turned over for production by other factories as well. Meantime, scramblers and receivers were built for the U.S. Marine Corps, and ships' transceivers for our New Zealand trawler fleet.

In the post-war period there followed a large consumer demand for receivers and, along with the distributors, H. W. Clarke (N.Z.) Ltd., every effort was made to develop quickly and market a fresh line of Gulbransen, Pacemaker and Cromwell sets. Materials were in short supply, but rigid quality control was vital, as New Zealand was the target of some "export drives"!

The output of the radio industry has grown from 24,000 sets in 1938 to 124,364 in 1958. However, in Collier & Beale the accent has remained on quality and technical excellence. The release of transistor receivers was so close to the overseas release that parts from U.S.A. were brought in by airmail every few days! The Pacemaker portables have always led the field and the transistor models in production since mid-1957 are still insufficient to equal the demand. Overseas experts are loud in their praise of the skilful design and unrivalled performance of these models.

Stereophonic reproducers were deliberately delayed until the art stabilised a little. Two new high fidelity models are being released after months of laboratory work, to ensure lasting satisfaction for the owners. Highly confidential experiments are in progress in the hope of offering stereo equipment even more suited to the normal domestic conditions. The immediate future activities call for a concentration in the singularly successful field of cordless radios, fully transistorised, for home and outdoor use, and the stereophonic radiograms of above average class.

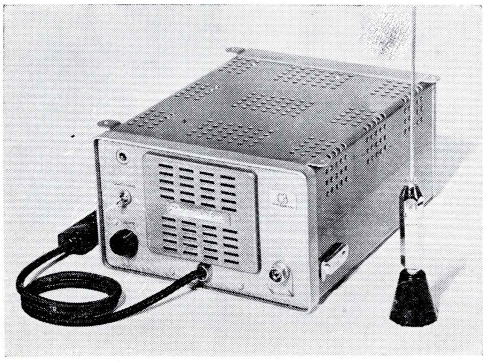
The production of radio telephone apparatus began before the war and has been maintained ever since. Most of the Post Office base stations, all of the Civil Aviation ground-to-air links, as well as a constant flow of vehicular transceivers, comes from the Willis Street premises. Major customers are Police, Post Office, Power Boards, aviation firms, Fire Brigades and transport operators. Both M.H.F. and V.H.F. apparatus is sold. The Company was selected for two eminent national jobs: Designing and building base stations and vehicle sets for Pakistan, under the Colombo Plan; and the supply of special sledge-carried sets for the New Zealand Antarctic expeditions. In both applications, the locally produced equipment withstood the climatic rigours with distinction. One of the latest products is a pocket-sized V.H.F. receiver using transistors; it is attracting great attention in communications circles. Such constant experience will serve the Collier & Beale staff in good stead for the tremendous work to be done in TV.

With the completion of a merger with the British General Electric Co. Ltd. several years ago, new products were added—electric heat-controlled irons, toasters, nightstorage heaters, battery chargers, convector heaters and fluorescent lighting fixtures in large quantities. It is anticipated that further lines will be offered to replace previous imports. The Company's machinery covers milling, shaping, turning, pressing, welding and precision toolmaking for plastic moulding and for metal processing. The making of electrical appliances, therefore, presents little difficulty.

For radio production, transformers, coils and all metal parts are made in the Ghuznee Street plant. Excellently equipped laboratories cater for quality control and basic design work.

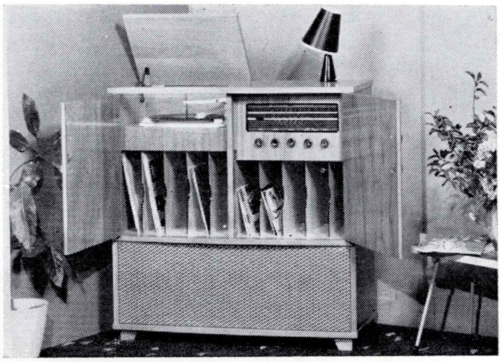
A special mark has been left on the Company's traditions by pioneers of the type of P. C. Collier, who, when Managing Director, originated most of the projects; B. T. Withers, who developed many of the communications equipments; H. B. Grove, recently-retired Factory Manager, who devised many mechanical aids to production. Today, the Company is in the control of younger men who have had experience in various spheres, but largely their enthusiasm has been fostered by Collier & Beale. The present staff numbers nearly one hundred and excellent amenities have been provided for comfort and recreation. Wages are above prevailing awards.

The Board of Directors comprises Messrs. S. C. Brown (chairman), P. C. Collier, F. Richardson (representing Sir Leslie Gamage of London), and R Bloxam (secretary). Mr. Martin Kimble is General Manager and Mr. Geo. Cuthbert is now Factory Manager. Mr. Jas. Hird is Development Engineer in charge of new designs and technical standards.



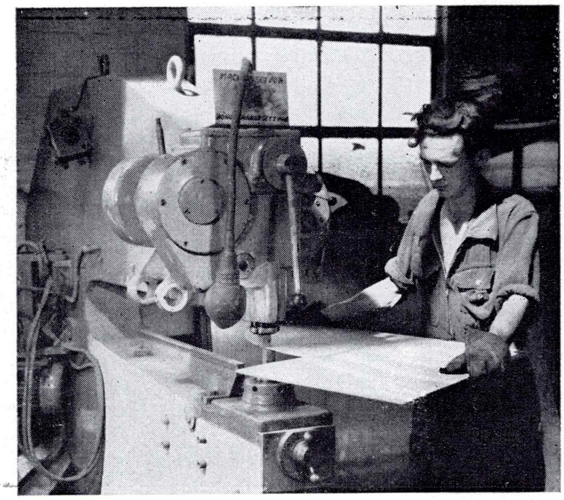
A PACEMAKER Radio Telephone by Collier & Beale.

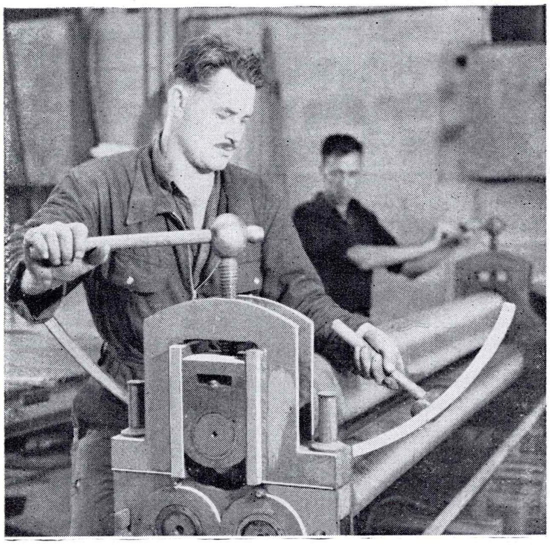
THE LATEST stereophonic radiogram marketed under the well-known Pacemaker label.



A Company providing an unparalleled TRUSCOTTS

Head Office & Detail Tanker Division:





Manufacturing facilities have enabled the production of Stainless Steel products of unrivalled quality and standard for the dairy, chemical and food processing industries, hospitals and institutions, in the Hamilton works of Truscott's (N.Z.) Ltd.

Athough a relatively young Company — established in 1953 — its foundation was based on a generation of experience and technical know-how supplied by the Australian Company of A. E. Truscott & Sons Pty. Ltd. With this background, therefore, Truscott's have been able to offer a unique service to industries utilising Stainless Steel products. Those industries in turn have, without reservation, profited accordingly from this Company's achievements.

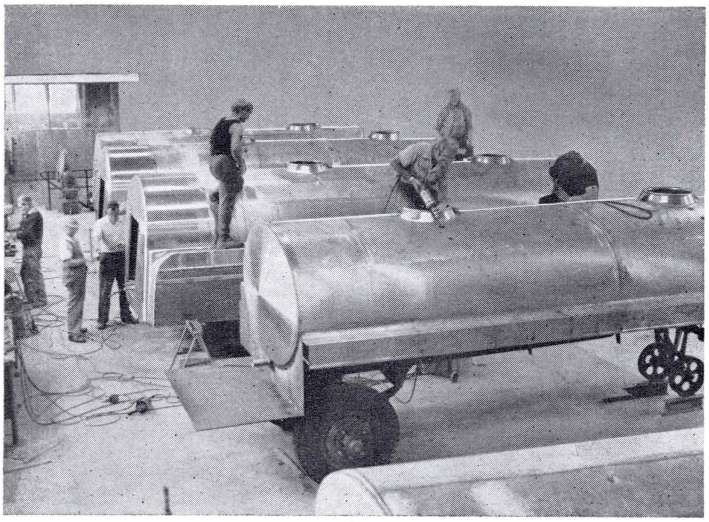
In several instances, the Company has taken the initiative and been the first in New Zealand to develop, process and manufacture several lines, for which patents are pending, in special steels for all industrial, commercial and domestic purposes. Perhaps the Company is best known for its association with the remarkable development of the tanker collection of farm milk thoughout the Dominion and, to date, it has manufactured 400 Stainless Steel Tankers for that work.

The Truscott Tanker

Many modes of farm milk collection have been adopted through the years; some methods were rather primitive, but, with the full realization of the true value of milk solids, the bulk transportation of whole milk to factories for processing became essential. Accordingly, in 1949 Truscott's designed and built a tanker, and this method of collection has become standard practice. Forty-one different Companies in New Zealand now operate these tankers.

The present day Truscott Farm Pick Up Tanker has been specifically designed to suit New Zealand climatic conditions and road classifications, and allowance is made for maximum

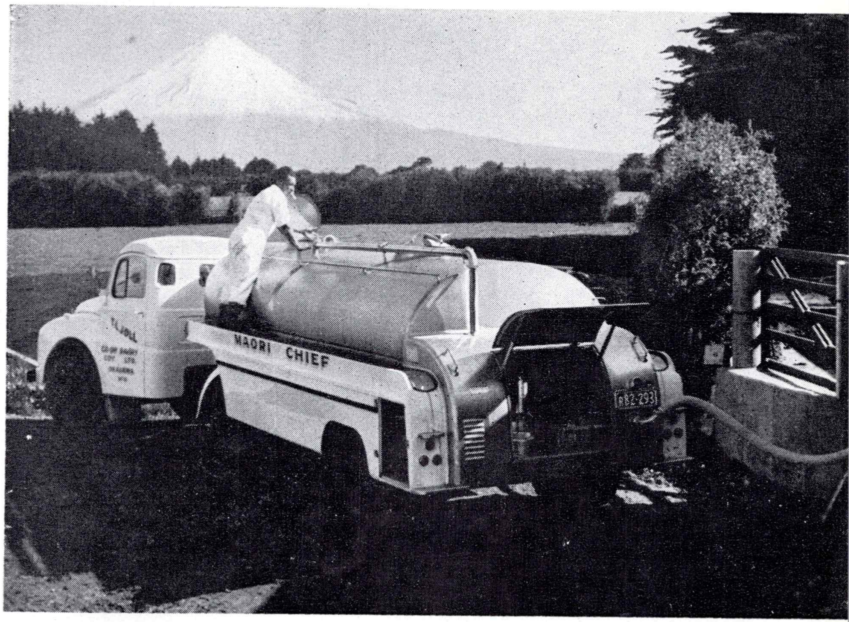
TRUSCOTT'S WORKS are equipped to cater for all industries using Stainless Steel products. (Top left) An efficient nibbler, which shears ⅛" stainless steel, swages, louvres and dishes; (centre) An 8 ft. roll capable of taking its full width of ⅜" in. plate; (lower left) One of the machine tools with which the factory is well equipped; (below) The final stages of tanker assembly. Photos: Studio One.



service in Stainless Steel products

(N.Z.) LIMITED

Section: Vialou Street, Hamilton
Great South Road, Te Rapa



A TRUSCOTT TANKER ON THE JOB: An early morning collection on a Taranaki dairy farm; Mt. Egmont in background.

payload, economy and ease of handling under the varying conditions prevailing.

Mass production of the many parts and accessories, and the introduction of numerous types of labour-saving jigs have kept the tanker cost at a "static level" over the past 10 years, despite increased manufacturing costs and the absorbing by the Company of the many improvements added to the tankers. Tankers are supplied in models of 1,600, 1,800, and 2,100 gal. capacity. The two first mentioned are bulkheaded into two separate compartments and the 2,100 gal. model is of three separate compartments. Pumping equipment is arranged to fill firstly the front compartment of 700 gallons capacity, to ensure maximum traction of the driving axle at all times. The remaining portion of the load automatically enters the rear compartments by means of an overflow weir in the bulkhead. The compartments are fitted with full surge plates of rigid design, which assure excellent road stability under varying load conditions. Besides pumping equipment operated by a special electric start petrol-driven motor, the pressurised boot compartment houses control valves, record system and drip sampling equipment; cream can carriers, air scoops and air duct pipes, etc., are featured in the tankers' design and construction.

Specially designed stainless steel insulated road and rail tankers capable of withstanding temperatures of 114°F were purchased under the Colombo Plan for operating on a 260-mile haul in India.

Versatility of Production

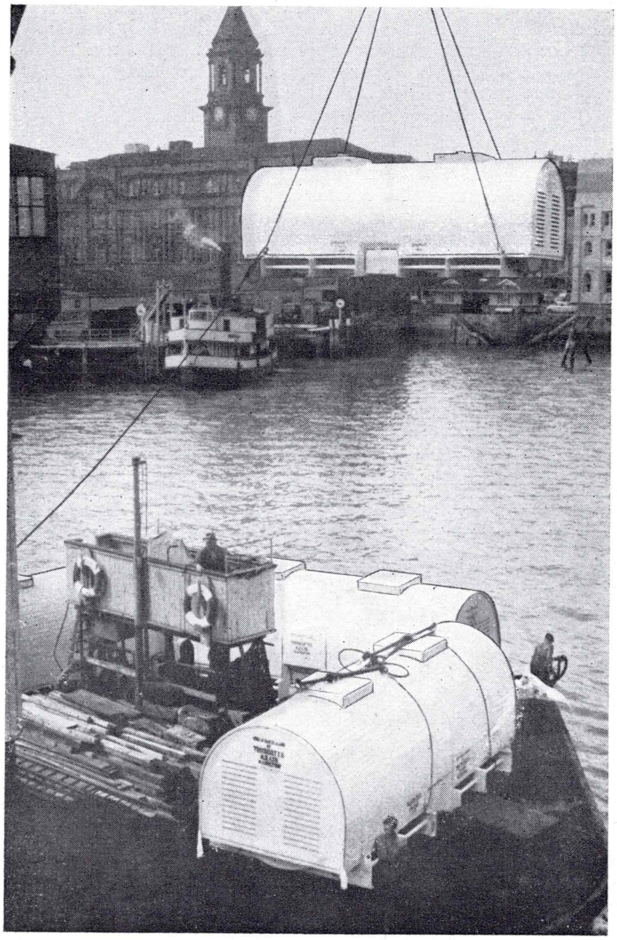
Truscott's multi compartment insulated Stainless Steel Beer Tankers of up to 2,000 gallon capacity have proved that beer can be carted economically over long and short hauls from the Brewery to the Hotels and that the quality of the liquid is conserved. Vertical and Horizontal beer cellar tanks manufactured from heavy gauge Stainless Steel 18/8 LC quality, internally polished, are further contributions by this Company to industry.

Jacketed pans or cauldrons are manufactured for use in the chemical industry; holding tanks, insulated farm vats of up to 4,800 lbs. capacity, babcock water heating containers, wash-up tanks, for the dairy industry; stainless steel refrigerated cool tops and display units and cool room doors, for the refrigeration industry; special stainless steel benches, wash tubs, shower boxes, wash-hand basins, urinals, hot presses and Bain Maries, architraves, architectural lettering, formalin cabinets, urns, chillers, sterilisers, for commercial, domestic, institutional and hospital usage; cast billets in stainless steel — here again Truscott's were the first to inaugurate this type of casting; sanitary bends and bayonet couplings, for which patents are pending, are all indicative of this Company's versatility of production.

And so the Company's policy to build only quality products has brought that goodwill of which all at Truscott's are proud.

Directors: H. L. Truscott (Chairman), W. A. Cruickshank (General Manager), H. S. Orr.

PART OF A SHIPMENT of 16 3,000-gallon insulated Stainless Steel rail tankers being loaded at Auckland. They were purchased under the Colombo Plan for operation on a 260-mile rail haul in India.



Home Appliance Manufacturers

N. R. CUNNINGHAM LIMITED

Incorporating General Holdings Ltd and Norge (N.Z.) Ltd

Head Office: Renall St Masterton
Factories: Ngaumataua Rd and Renall St, Masterton

MR. N. R. CUNNINGHAM,
Managing Director.

N. R. Cunningham Ltd. was founded in 1930 when radio wholesaling and retailing was its sole undertaking. In 1938, the first domestic refrigerators were produced and, since that time, the Company has developed almost entirely into home appliance manufacture and marketing.

First refrigerators kerosene-operated

Production in earlier years was, of course, of the kerosene type of refrigerator and, even today, the Company still produces limited numbers of kerosene refrigerators for our more isolated communities and for certain Government Departments. Many of these refrigerators are used in lighthouses and other isolated Government undertakings. N. R. Cunningham Ltd. is the only company that has supplied the larger kerosene refrigerator requirements since the end of the war. The maximum demand for this appliance was approximately 500 cabinets yearly, but, with the extension of electric reticulation, etc., the demand has dropped steadily.

War-time production

During the war, large numbers of refrigerators were produced for the Armed Forces in the Pacific and as far afield as India. Other war-time production included fuse parts for shells and parts for Bren Gun carriers.

Electric refrigerators

However, by far the largest volume of business for many years has been in the field of electric refrigeration for domestic use. In this field, the Company has progressed tremendously and, for some years now, cabinets for such well known brand name refrigerators as "H.M.V.", "Princess" and "Hostess" have been produced in the Masterton factories.

Overseas associations

Possibly the greatest advancement in the history of the company was the successful arrangement made with the Norge division of the famous Borg-Warner International Corporation to manufacture Norge Home Appliances in New Zealand. Production under the Norge licence required the use of special units which are unobtainable on the open markets. As a consequence, an English engineer was brought to New Zealand to set up a production line for the manufacture and assembly of refrigerator units. The equipment used on this line is probably the most modern and complete in the whole of Australasia.

In addition to the new production line, many other new techniques and machines have been installed and the Company's production is now over 12,000 refrigerators per annum and, in the first year of production on Norge Tumble-dryers, the output is expected to exceed the 2,000 mark.

Norge licence of great value to N.Z. Company

There is no doubt that the company's association with Norge in America has been of terrific advantage in recent years. Mr. N. R. Cunningham, Managing Director of the Company, takes full advantage of the research and testing

Four-way tumble-dryers

Recently, Norge introduced its automatic tumble-dryer which has several exclusive features. The Norge Automatic dryer is the only tumble-dryer available in this country to feature four ways of drying clothes : tumbling (with or without heat) and stationary (with or without heat). The stationary method of drying means that delicate woollens and wonder fabrics can be dried safely. The Norge fan is much larger than in competitive domestic dryers and over 160 cubic feet of air goes through the drum every minute. Drying is therefore fast, without the necessity of force drying by excessive heat. Many other new overseas improvements have been incorporated.

facilities available. Regular trips are made to the States to discuss and see first-hand, new developments and research programmes that are constantly being set in motion throughout Norge's six factories, and in the renowned $36\frac{1}{2}$-acre Central Research Centre at Des Plaines, Illinois. The New Zealand company in also in close touch with other Norge manufacturers throughout the world. Samples of Home Appliances are exchanged and tested and new overseas production methods are studied and inspected by the Company's technical personnel.

Expansion

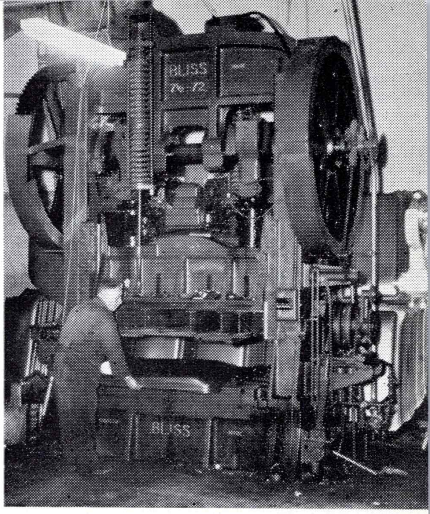
The Company's policy of consistent advancement both in manufacture and knowledge has, of course, meant very rapid development and expansion of its resources in Masterton. In spite of the disastrous fire in September, 1957, which destroyed one of the factories, the increased demand for the Company's output has been met. This has been achieved only by increasing the storage and factory space at a phenomenal rate — in fact, the total floor areas are now in excess of 70,000 square feet. It is interesting to consider that rather less than 20 years ago the complete manufacturing and storage facilities were less than 3,000 square feet in all.

Staff also has increased in leaps and bounds and the Company now employs 180 people. The annual wage payments amount to £140,000 and the capital employed by the Company now exceeds £300,000.

New appliances

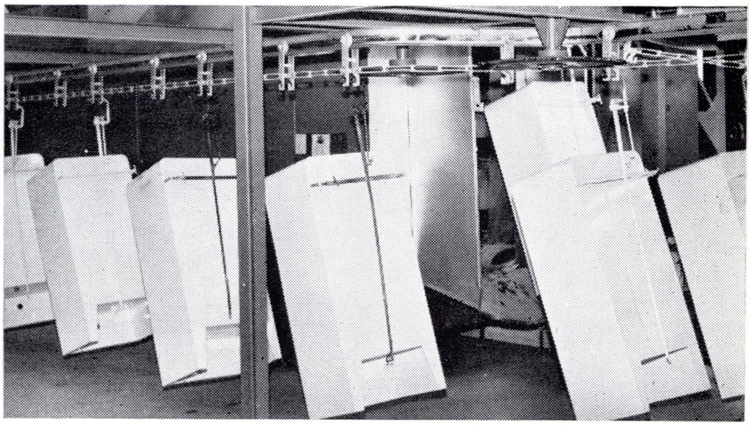
In spite of the heavy pressure on the factory to fulfill demands for existing appliances, Norge expects to market further new appliances. Many at present being developed and tested in the States will follow.

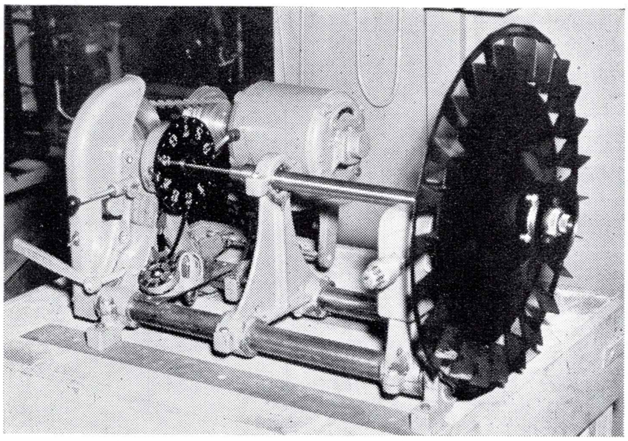
ONE OF THE LARGEST SHEET METAL DEEP-DRAWING PRESSES USED IN THE HOME APPLIANCE INDUSTRY IN THIS COUNTRY. This huge machine has a pressing capacity of over 250 tons. This press is used for stamping complete refrigerator doors and tumble dryer cabinets in one operation and is controlled by one operator. Machines identical to this are used by the American and English Automotive Industries for stamping out car bodies, etc.



Below :

LINE OF PAINTED CABINETS EMERGING FROM THE METROPOLITAN VICKERS INFRA-RED BAKING OVEN. These cabinets from the spray-painting plant enter the oven continuously and paint is baked into the rust-proof steel at a temperature of 260°F. Daily capacity is over 60 completed cabinets and components and plans are in hand for extending production capacity.

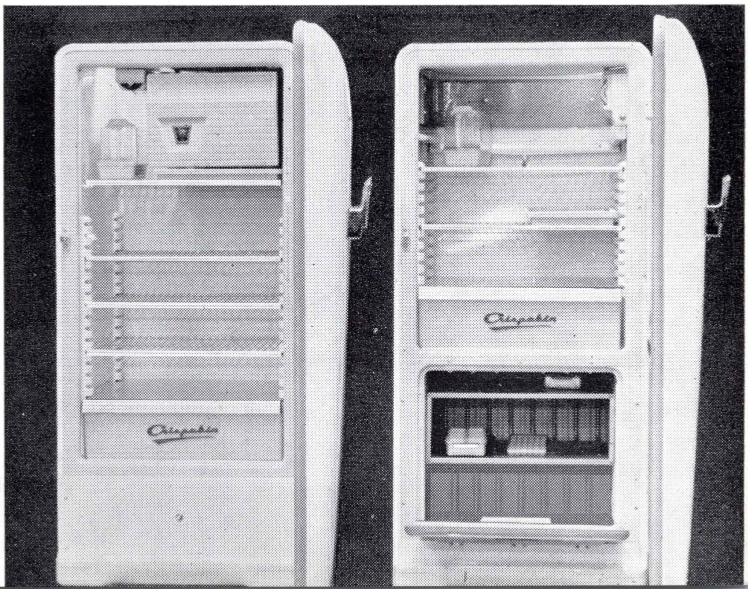


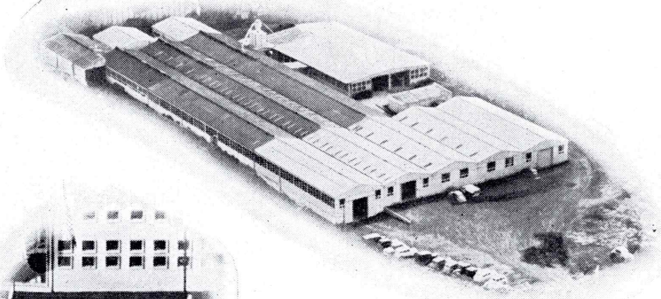


At left :

THE LARGE 20 in. BLOWER USED IN THE NORGE TUMBLE-DRYER NEEDS TO BE PERFECTLY BALANCED FOR SMOOTH OPERATION. This meticulous balance is achieved scientifically by the use of the American Dynamic Balancer illustrated. This unique and delicate instrument automatically registers the slightest out-of-balance discrepancies.

COMBINED REFRIGERATOR-FREEZERS AND FAMILY REFRIGERATOR — N. R. Cunningham was one of the first companies in New Zealand to market a refrigerator incorporating a separately sealed genuine deep-freeze compartment. The model illustrated on the right was the first deep-freeze refrigerator combination to retail at less than £130.0.0. It incorporates almost 8 cubic feet of storage space. Shortly, Norge will introduce an additional deep refrigerator-freezer model incorporating $7\frac{1}{2}$ cubic feet of refrigerating space and over 3 cubic feet of deep-freeze — almost 11 cubic feet of space in all. The other model is the Norge $7\frac{3}{4}$ cubic feet refrigerator, which retails at less than one hundred pounds! All models are complete with accessories such as water jugs, ice and ice cream trays, etc., and all models have the Norge "adjustable shelf" system of storage.



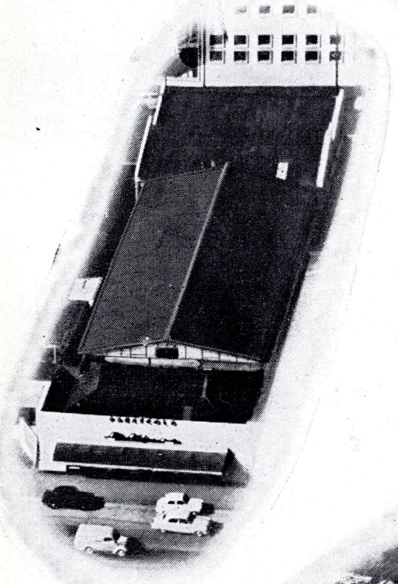


COMMERCIAL FACTORY, Penrose.

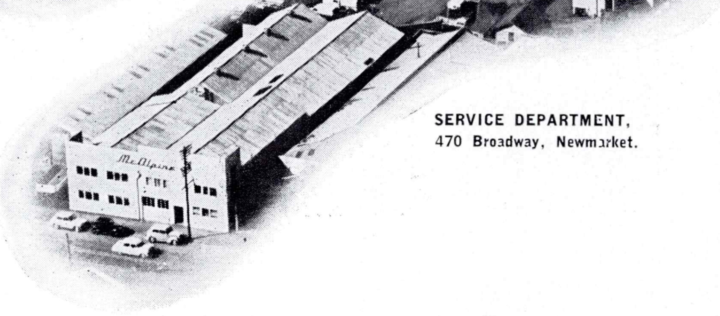
Refrigeration plays a vital part in all our lives today

McALPINE REFRIGERATION LIMITED

392 Broadway, Newmarket, Auckland. Factory: Penrose



(Centre left) **ADMINISTRATION AND DOMESTIC ASSEMBLY,**
392 Broadway, Newmarket.



SERVICE DEPARTMENT,
470 Broadway, Newmarket.

As specialists in refrigeration — industrial, commercial and domestic — and also air conditioning, McAlpine Refrigeration Limited are the leaders in the field. The Company has been operating for more than 25 years, and during that time has paid particular attention to trends and developments overseas, with a view to ensuring that equipment offered in New Zealand is up to world standards.

To that end, it has been the Company's policy to send its executive and engineers overseas so that they might become familiar with modern developments and new engineering practices in this very specialised field.

A Humble Beginning

Many companies have been commenced in humble circumstances, and the business started by James S. McAlpine is no exception to the rule. James McAlpine started his own concern on a very limited capital in a small garage in Parnell during the difficult years of the depression of the 1930s. From small beginnings, the business grew, with the result that in 1935 the firm of James S. McAlpine Limited was founded.

The time came when refrigerated cabinets were required. James McAlpine undertook this work so successfully that, even today, several cabinets, one of which may be seen in the Grand Hotel, Auckland, are still operating satisfactorily. At that time, refrigeration in New Zealand was in its infancy, and this was undoubtedly a pioneering feat.

Steady Expansion

A factory was established in Emily Place, Auckland, and inevitably became too small, so the firm moved to new premises in Newmarket. Production was stepped up to maintain its early lead, and about this time — 1937 — McAlpines became the first firm outside the United States of America to build a completely refrigerated ice cream truck. Today there are some 50 vehicles designed and refrigerated by McAlpines operating on the road.

A very important step forward was made when licencing arrangements were entered into with the Pressed Steel Company Limited of Cowley, Oxford, England, one of the largest manufacturing companies of its type in Europe, and manufacturers of the famous line of Prestcold Domestic Refrigerators. This refrigerator is the only one on the local market which is entitled to employ the Royal Warrant and to bear the seal of the British Goodhousekeeping Institute, which accords a guarantee of perfection only awarded after the most stringent investigation by highly qualified engineers.

About this time, too, McAlpines entered into a licencing arrangement with the Weber Showcase & Fixture Company of Los Angeles, U.S.A., and this meant that a New Zealand company had access to the development work carried out by a powerful American company in perfecting the most modern type of refrigerated display cases for self-service shopping. It would not be too much to say that McAlpines, in producing these modern type cases of American design, have strongly influenced the trend in New Zealand for the changeover from the old type store to the modern self-service type shop, and food-market. These modern cases, built by McAlpines, are to be seen in shops and food-markets throughout the Dominion.

Shortages of material during the War years led to a good deal of resourcefulness on the part of the principal. Many essential supplies were cut off by reason of their source, and substitutes had to be devised and provided. This was achieved so successfully that McAlpines were able to play a major part in meeting the unprecedented demands for refrigeration from British, Australian, American and New Zealand forces, both in New Zealand and in the Pacific Islands. McAlpine refrigeration was used by British occupation forces in Japan, and a McAlpine serviceman was one of the first New Zealand civilians — if not the first — to enter that country after its capitulation.

PRESTCOLD
McAlpine
McAlpine
Experts PREFER
McAlpine COMMERCIAL Refrigeration

WINDOW DISPLAY of McAlpine refrigeration equipment at the Head Office in Broadway, Newmarket.

Termination of hostilities was followed by a rapidly mushrooming growth of production, both in variety and design. The emphasis was placed on the commercial aspect of refrigeration — cool rooms, ice cream manufacturing plant, and food storage cabinets of all types and sizes. These units were generally electrically operated, but certain models were constructed for petrol engine drives.

Foresight and association with leaders in the refrigeration field in those early days has led to a continuous flow of basic materials from sterling and dollar areas — cork from Spain, steel from the United States, Canada and England, copper tubing from Canada and Australia, and compressors and refrigerant gases, viz. Freon and Arcton, from England and the United States.

In 1950, further expansion was required, and a factory was built in Penrose, the largest of its particular type in Australasia. A third building, also in Newmarket, was acquired for the purpose of handling both service and installation. The staff now numbers approximately 200 employees.

The Quick Frozen Food Industry

Within New Zealand probably few activities have expanded at a faster rate than the quick frozen food industry. The demand for commercial refrigeration has gone hand in hand with the rapidly developing market for frozen foods. With its background, experience, and trained technicians, it was only to be expected that McAlpines would play a big part in providing refrigeration equipment, not only for the freezing of foods, but in the warehousing, transport, and, finally, the shop display of those foods. In other words, it is possible that McAlpines have had a hand in protecting the frozen food right from the time it is picked until it is used by the housewife.

The Company has provided very big plants for processing of frozen foods, large holding rooms for the warehousing, refrigerated transport to carry the foods from the processor to the warehouse and thence to the retailer, refrigerated display cases for the retail shop, and possibly a Prestcold for the housewife in which to hold the food until it is used.

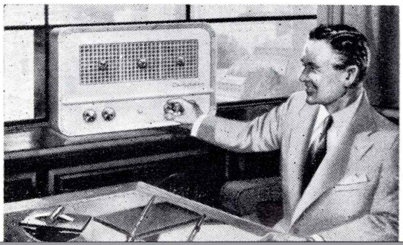
Refrigerated transport has quite naturally become a vital link in protecting perishable goods, and, for the finest equipment, the advice and service offered by McAlpines is of paramount importance to the user.

The Company also provides around-the-clock service, and has the largest refrigeration Service Department in New Zealand, with vehicles equipped with radio, so that the serviceman is constantly in touch with headquarters, and prepared to meet any emergency.

Highest Standard of Efficiency

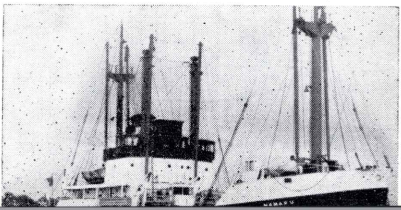
No Company in New Zealand covers such a wide range of refrigeration products as McAlpines, and this circumstance arises out of the fact that, since its early beginnings, the Company has set itself out to provide custom-built machines for the varying requirements of its clients. The fact that the New Zealand market is relatively small has contributed to the necessity for producing a big range, as obviously the market does not cater for large production of any one type of commercial refrigeration.

Needless to say, each unit is manufactured to the highest standard of efficiency. Industrial refrigeration, butcher's cool



A WINDOW-TYPE Air Conditioner.

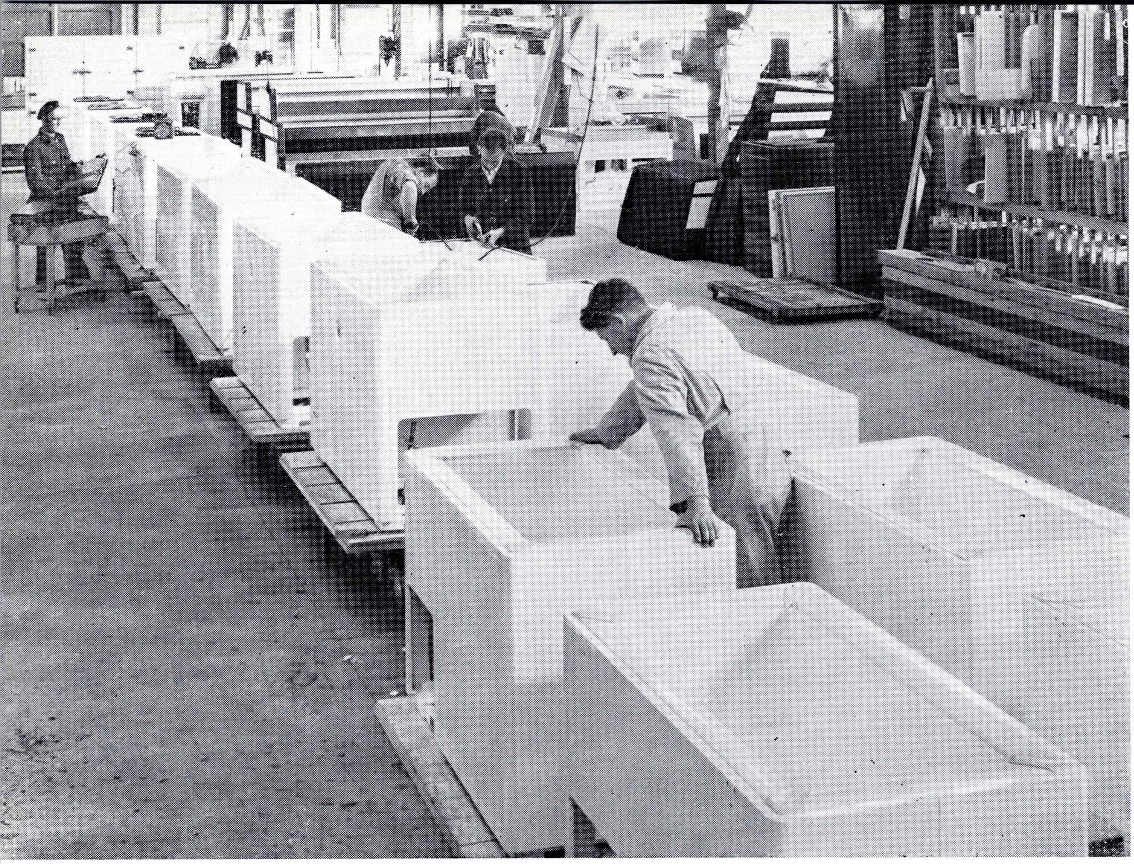
LOW TEMPERATURE marine installation.



McALPINE

REFRIGERATION

LIMITED



AN ASSEMBLY LINE in the production of home freezers.

rooms, refrigerated slabs for fishmongers, marine work, and refrigeration for all types of special applications, are indicative of the Company's versatility.

The Company has an important link with modern medicine. Refrigeration has made possible the establishment of blood banks, bone banks and hypotherapy, and the Company has been responsible for the supply of refrigeration equipment for some of our largest hospitals.

Refrigeration has made practicable the artificial insemination of animals. Prize bulls, now dead, are siring healthy calves. Similarly, the country's meat and dairy exports would amount to little if this produce could not be frozen or chilled.

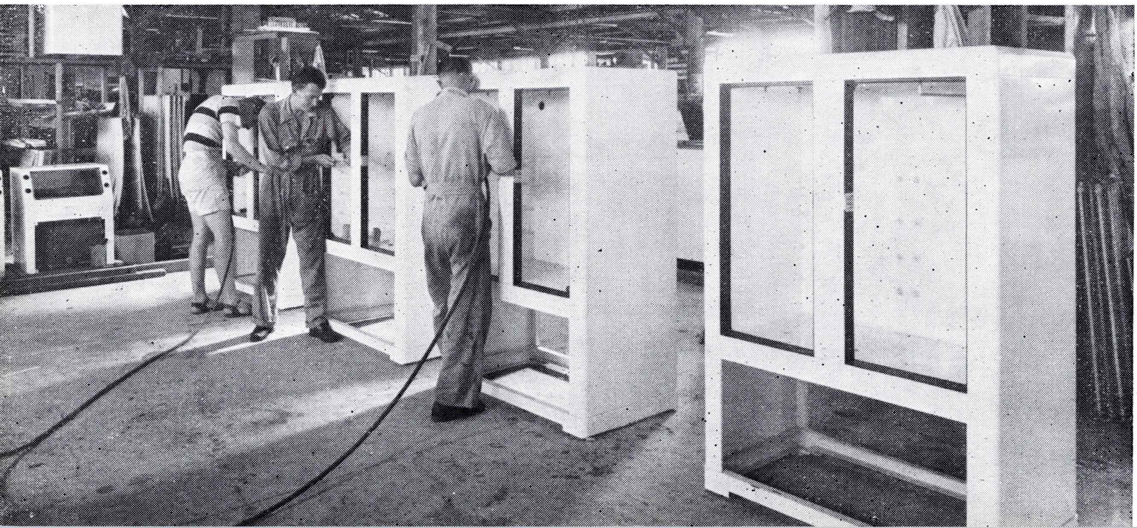
Further, McAlpines have designed a unit to induce artificial frost on grass — an important aid to scientists engaged in agricultural research. In the dairy industry too, McAlpines are very active. In fact, the largest refrigeration contract ever to be let in New Zealand was gained by the Company for farm milk chillers. Refrigeration plays a very important part in maintaining the high standard of our dairy products and ensures that quality is consistent.

Air conditioning has boomed over the last year or two. Its installation has been a boon to industry, as in the case of the manufacturer of nylon yarn, where the moisture content of the atmosphere must be kept constant. In retail stores and offices, conditions of comfort have been effected by its introduction. Of recent date, a 40-ton capacity air conditioning plant has been installed in a city store, for the purpose of cooling the air in summer and heating it in winter. The air outside the building is used as a heat source, and in winter the plant is able to extract sufficient heat from the surrounding atmosphere to ensure comfortable working conditions throughout the entire building.

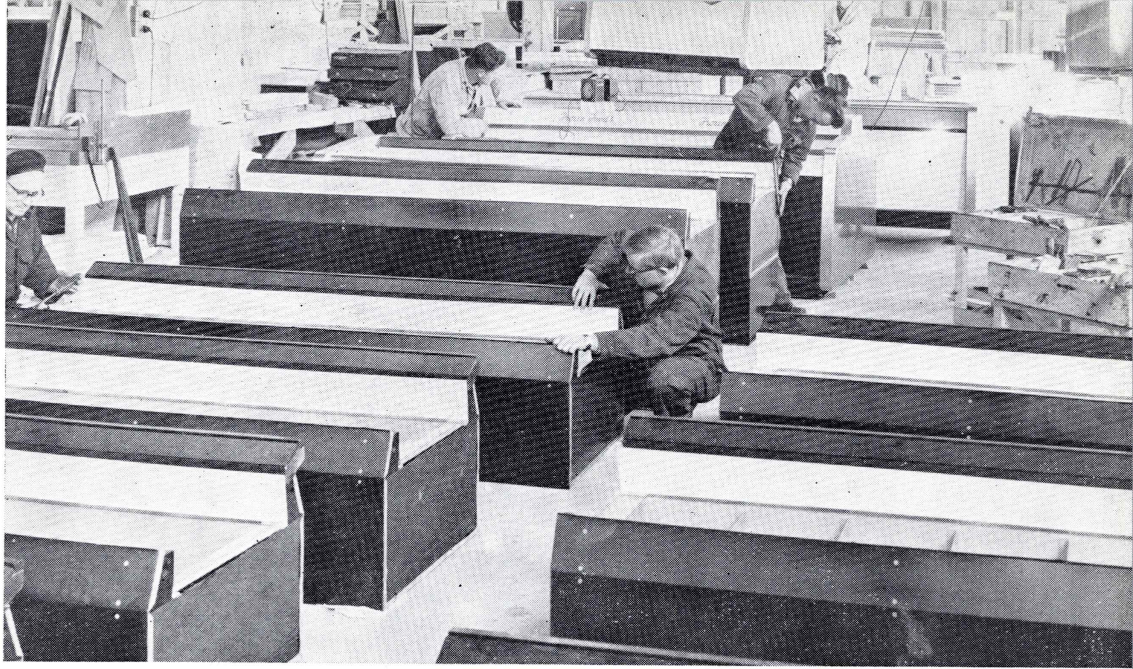
McAlpines have pioneered in New Zealand the application of this reverse cycle heating process, which, in simple terms, means that the plant will cool the building in summer, and provide heat in winter. The process is economical as far as heating is concerned, in that for every kilowatt of electricity consumed, approximately three kilowatts of heat is generated and distributed.

Emphasis on Research

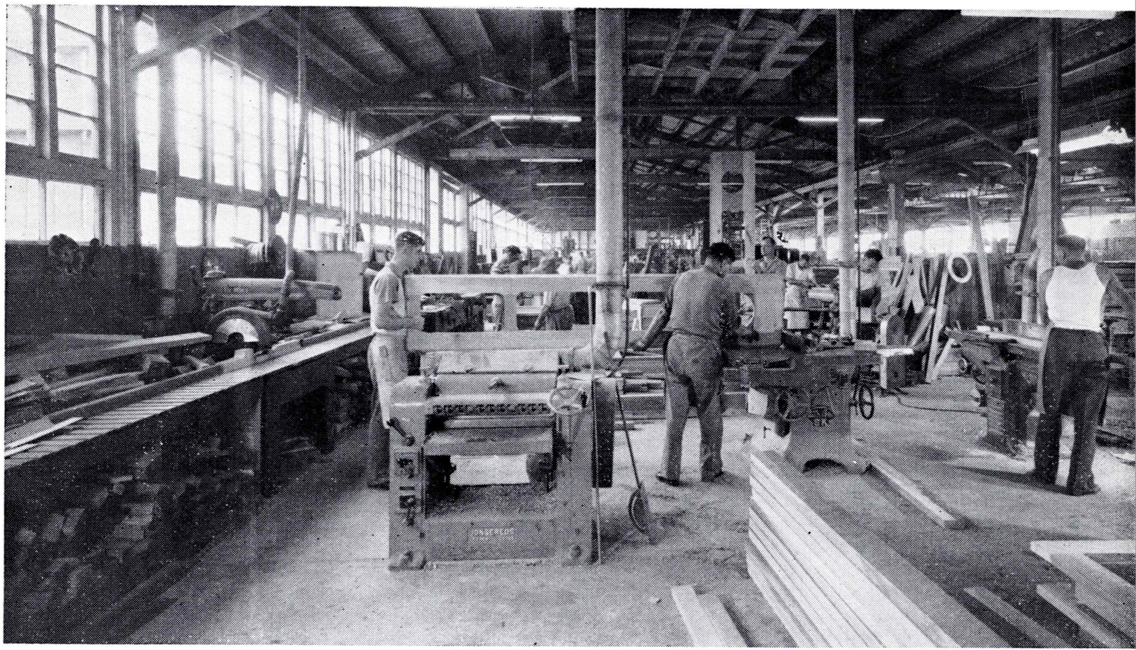
James McAlpine can look back upon the success of his organisation with justifiable pride. His policy now, as it has been in the past, is to manufacture products comparable with the best overseas standards. A primary factor in refrigeration is cleanliness — on this score he is exacting. Furthermore, he insists upon up-to-the-minute technical data and efficiency. It has always been his aim to maintain a satisfied and loyal staff, without whose competent assistance, he would be the first to admit, success would have been impossible.



FOOD STORAGE REFRIGERATORS being assembled in the factory at Penrose.



FROZEN FOOD DISPLAY CASES: Workmen are carrying out the finishing touches to models (foreground). Rear: Completed cabinet being prepared for despatch.



THE CABINETMAKING DEPARTMENT: This is a general view of the factory where fabricating of parts is undertaken.

EGGS
BACON
DELICATESSEN
Peach Lard
CROWN

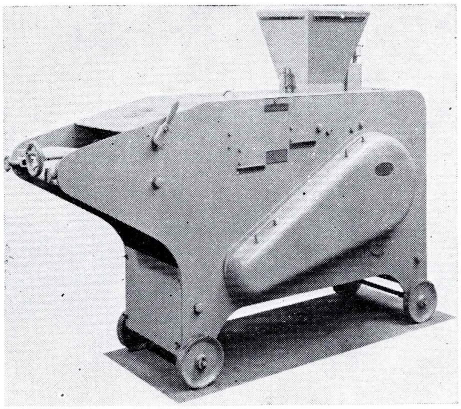
FROZEN FOOD attractively displayed and kept at the right temperature in a McAlpine show case in a large store.

Photos: Sparrow Industrial Pictures.

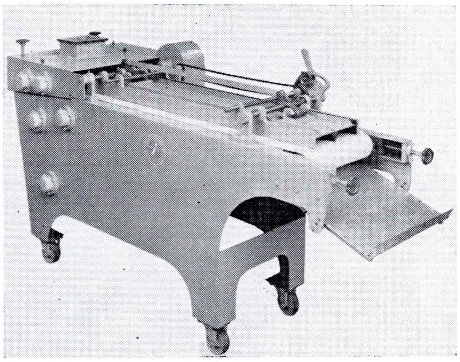
A Company whose well-known product is built to suit New Zealand coals

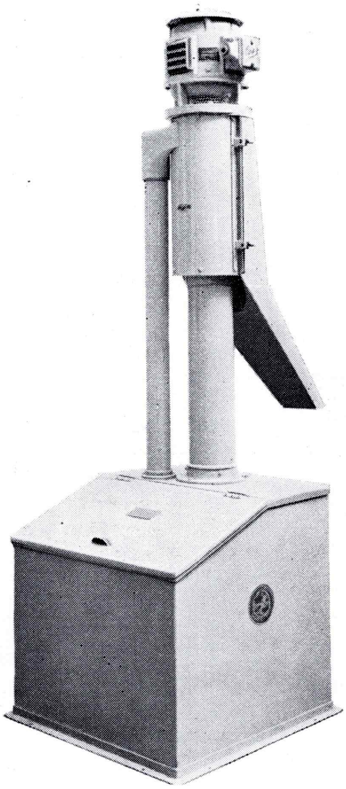
CROUCHER & CROWDER ENGINEERING CO LTD

Nelson Street, Hawera



PRODUCTS OF CROUCHER & CROWDER ENGINEERING CO. LTD.: (Left) A Dough Divider; (below) A Dough Moulder; (right) Flour Sifter.





The trade names 'C & C', and 'Croucher-Dunn' are well known, not only throughout the length and breadth of New Zealand, but also in Australia and the United Kingdom. The Company associated with these trade names—Croucher & Crowder Engineering Co. Ltd.—has, since its founding in 1929 and with its registration as a limited liability company some four years later, exported Cheese Factory equipment to those countries.

In the early stages of the Company's history, it undertook basically the manufacture of 'Croucher-Dunn' Agitator Mixers, Cheese vats, Whey tanks and general Structural Steel fabrication. Success in this field led to the development later, of the 'C & C' Automatic Coal Stokers, which are now extensively used by boiler operators throughout New Zealand.

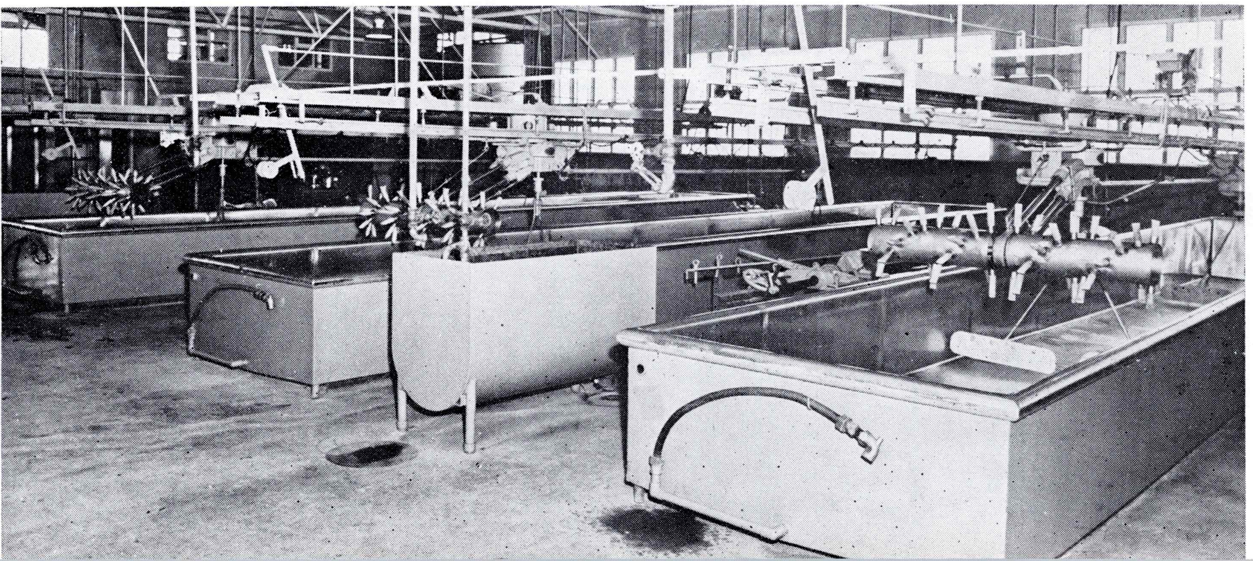
Spreader Stokers of the 'C & C' type are gaining favour both in new installations and where modernisation programmes are dispensing with hand firing. This stoker is easy to install, occupies a minimum of floor space, saves labour, reduces smoke, and is suitable for any type of boiler. It achieves that effect which most nearly resembles hand firing in character of the fuel bed and, at the same time, maintains a very thin uniform bed of fuel. The resultant success of this operation is that the air-fuel mixture can be maintained close to the most desirable ratio, and a uniform head of steam produced.

The principle underlying this method of stoking is simply that the coal is fed by means of a spiral worm feed on to a spreader and directed into the furnace at a distance of a foot or more above the flat grate surface. Sufficient impulse is imparted to carry the lighter particles of coal the full length of the grate and heavier material part way. The fines burn in suspension—medium-sized particles distil off most of their volatile content and fall to the grate as hot coke or carbon; large particles give up at least part of their volatile content before dropping on the hot fuel bed of the spreader stoker.

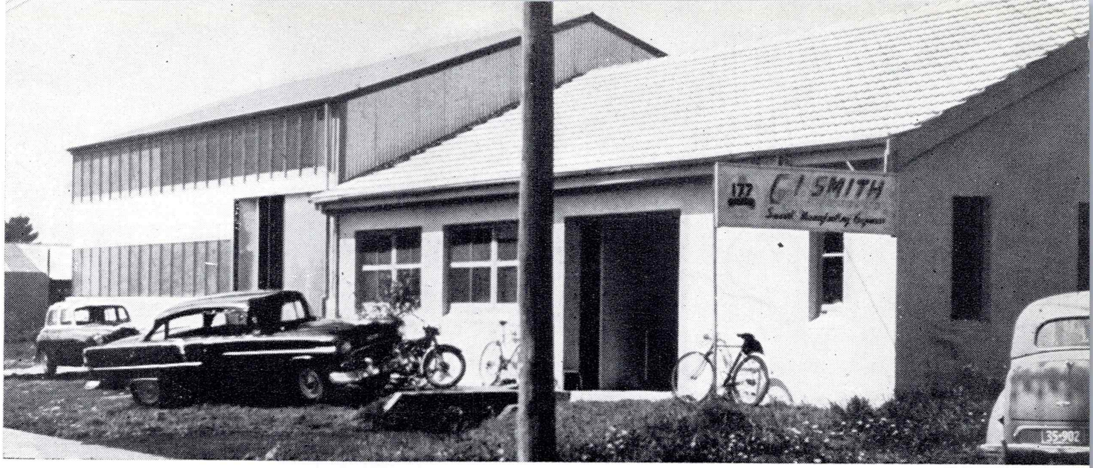
For some years, bakery machinery, in the form of Dough Moulders and Dividers, Flour Sifters and Pastry Brakes, have been produced, and all these items, along with their many other renowned lines designed, manufactured and patented by this Company, are distributed throughout the Dominion by agents in all districts.

AN INSTALLATION of several Agitator Mixers in the Wairarapa Cheese Factory.

Photo: Derek Messenger.



A specialist
engineering
organisation



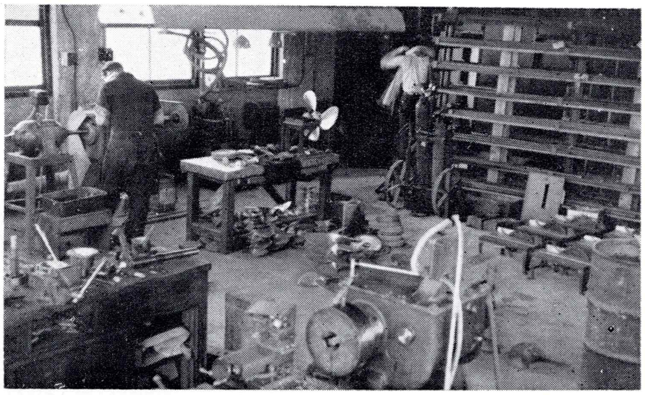
G. I. SMITH ENGINEERING LIMITED

177 Marua Road, Panmure, Auckland

A flair for designing and manufacturing special machines and jigs led Mr. G. I. Smith to resign a responsible position in the engineering field some 10 years ago and establish a business on his own account in a small shed at Manurewa. His specialist knowledge, particularly in repetition work, brought a steady demand for this type of work and culminated in the eventual founding of G. I. Smith Engineering Ltd., in 1950.

Whether it has been merely a matter for some advice, fabrication of a single unit, or the design, manufacture and installation of plant, many firms have in the past profited by this Company's experience. In addition to general engineering, structural steel work of various types — steel buildings, caravans and trailer chassis, and steel racks to balustrades for house terraces — is undertaken.

PART OF THE FACTORY where parts are manufactured for small boats.



The Company's manufacturing facilities enables it to produce punches and dies to extremely fine tolerances and limits, the stamping of small pressings and the repair of intricate machinery, for which purpose modern and precision machines, operated by qualified engineers, have been installed to ensure absolute satisfaction of production with the involved and skilled work that they have been called upon to perform.

Castings of guaranteed quality in all non-ferrous metals, including nickel, bronze and brass, are turned out and this facet of industry is the starting point of another specialist undertaking of this organisation — that of manufacturing small boat fittings from cleats to 20 inch propellors.

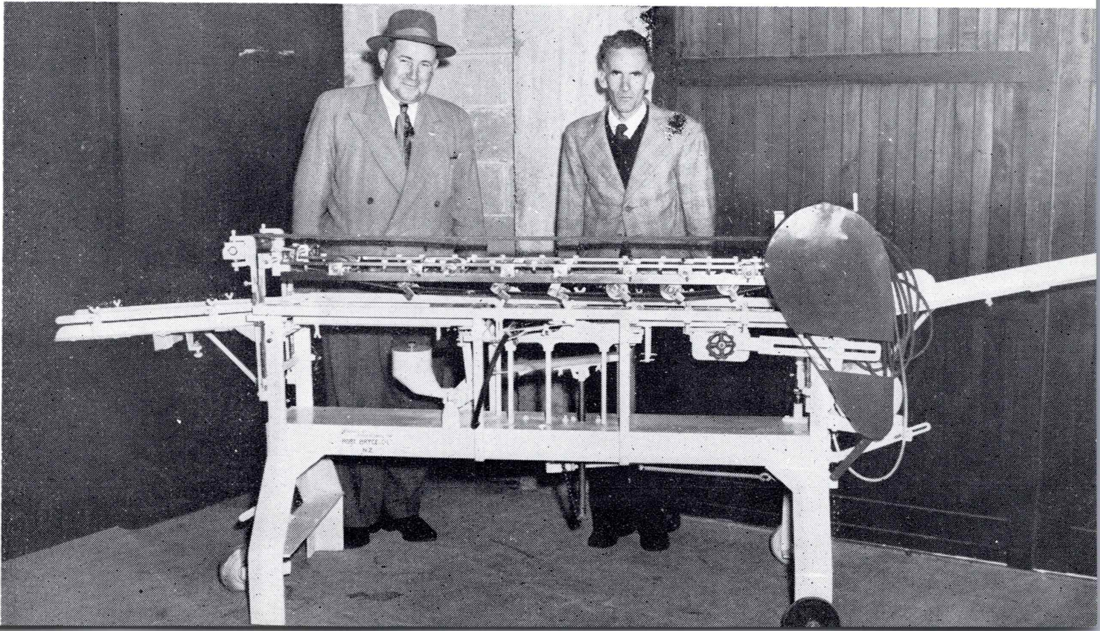
The designing and manufacture of special machines for industry, and an example of New Zealand ingenuity, is featured in the building of a tin-labelling machine, redesigned from a series of illustrations of an overseas model. Mr. Smith designed this machine, which is not only far simpler in operation than the model copied but has worked perfectly ever since its installation.

A carton-sealing machine, another special purpose model, which proved eminently successful, was developed from very rough sketches of what was required.

From the Company's humble beginnings, progress was assured, for workmanship was based on quality and a friendly and understanding attitude to even the smallest job, with an accurate costing on all work. The Company's contribution towards the development of industry in general is highlighted in its production of top class machining of components for manufacturers throughout the Dominion.

Directors: G. I. Smith (Mgr.), A. M. Smith, J. G. Grierson.
Secretary: C. Howard.

THE TIN-LABELLING MACHINE redesigned by Mr. G. I. Smith (right).



Extruded metal products for all kinds of industry

McKECHNIE BROTHERS (N.Z.) LIMITED

Carrington Road, New Plymouth

The Dominion's only brass and aluminium extrusion press, supplying a nation-wide demand, is situated at New Plymouth, in the heart of an essentially primary producing district, in the Province of Taranaki.

McKechnie Brothers (N.Z.) Ltd. was registered on 27th February, 1951, with an authorised capital of £200,000. The following year the first buildings were erected on a five-acre site. Since then, the Company's land holdings have been increased to 10 acres, on which are built a Foundry 130 ft. by 90 ft., an Extrusion Mill or Workshop 380 ft. by 90 ft., and three spacious annexes. The consumption of electricity has been raised until it is in excess of 2,000,000 units a year.

A full range of brass extrusions

Brass was first melted in electric furnaces on 17th June, 1953, under the supervision of experts from the Birmingham works of McKechnie Brothers Ltd., England. Liaison with the parent Company has been constantly maintained, particularly on technical matters, so that the knowledge and facilities of the research departments of the the parent Company are always at the disposal of the New Zealand staff.

On the 8th August, 1953, the first brass billet was extruded and the first consignment of approximately nine tons of brass rod was despatched to Wellington. Over the intervening years, brass melting from scrap copper and brass from manufacturers' process waste, from salvage operations — parts of old motor cars, shell cases, miles of old telephone copper wire — has been undertaken. The raw materials are received and sorted into well defined categories and electrolytic zinc slabs from Australia, copper from Rhodesia, zinc from Tasmania, and tin from Malaya are added to the scrap for final processing. Today, brass melting exceeds 100 tons per week.

The main melting equipment is provided by 130 kva and 160 kva Ajax Wyatt low frequency electric induction furnaces, pouring 850 lb. and 1,200 lb. metal hourly. The furnaces are used to cast up to 16 different alloys of brass, each for a particular end use. After melting, the metal is poured into 54 in. long billets using water cooled copper moulds. An automatic billet sawing machine next cuts the product into 17 in. lengths; these are stamped to indicate the type of alloy cast.

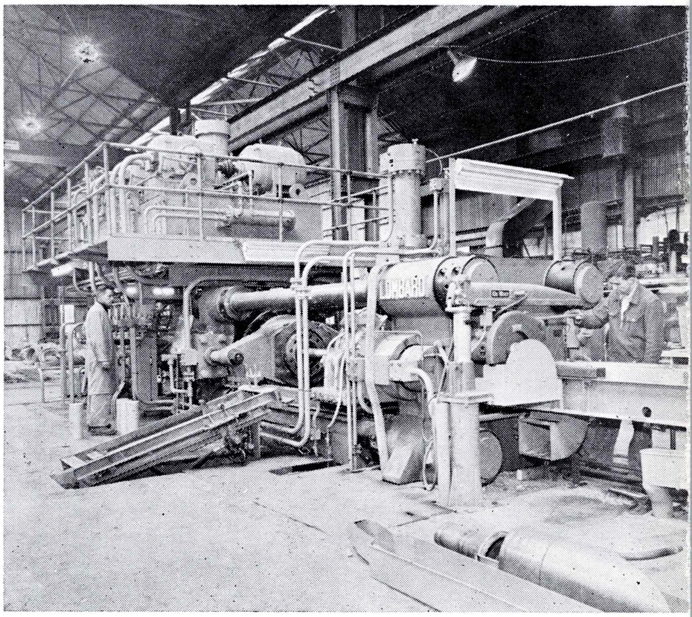
A further ½ ton oil-fired crucible tilting furnace produces brass and gunmetal ingots for New Zealand foundries, and small oil-fired crucible furnaces produce chill cast phosphor bronze rod used in the making of bushes and bearings.

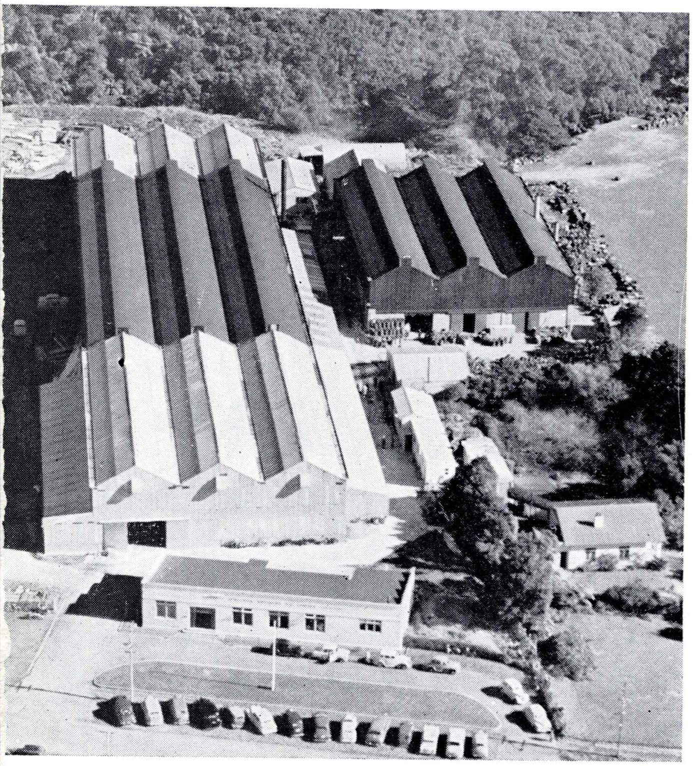
Billets from the foundry, after reheating in an oil-fired open hearth type of furnace, are loaded into a Shaw extrusion hydraulic press, which is powered by three 90 h.p. pumps designed for a working pressure of 3,500 lbs. per sq. inch. One 150 h.p. set of pumps is normally held in reserve. The press exerts a maximum forward thrust of 1,200 tons on the extruding ram and the shape and size of the extruded metal depends upon the die used — round, hexagon, square, rectangular, channel or angle etc.

Rod from the hot extrusion press generally has a matt finish and the dimensional variation is too great for many purposes. Hence a variety of special machines, including 100 kva electric annealing furnace, drawbenches, reeling machines, stretching machines, Schumag automatic drawing, straightening and cutting off machine, wire drawing machines, welding wire production machine, and a curtain rail coiling and straightening machine, are installed to impart a high degree of straightness, polish and accuracy of dimension.

COILED CURTAIN ROD in the McKechnie works, New Plymouth.

A VIEW of McKechnie Bros.' new Lombard Press.





THE BRASS AND ALUMINIUM EXTRUSION WORKS of McKechnie Bros. (N.Z.) Ltd., New Plymouth.

Brass rod from the New Plymouth factory is used to make several million parts for plumbing installations, annually. It is also destined for factories manufacturing radios, washing machines, refrigerators, electric and gas cookers, and every motor vehicle assembled in this country. McKechnie's is one of only two brass extrusion firms in the world making curtain tracks ready for supply to retailers in coiled form.

Now Aluminium Extrusions

McKechnie Brothers (N.Z.) Ltd. entered the aluminium field when the first billet was extruded on the 18th December, 1958. This expansion involved the purchase and installation of a Lombard extrusion press with a maximum forward thrust of 1,500 tons on the main ram, plus 200 tons on side rams and an operating pressure of 2,500 lbs. per sq. inch. Of American origin, the press has a self-contained hydraulic system with pumps located overhead, and the billet container electrically heated under thermostatic control and capable of extruding aluminium, brass and copper.

In a world of expanding industrialism and with a particularly rapidly growing New Zealand demand, aluminium, like other materials, will find its future determined by the uses it can serve best. These uses are expanding as a result of the basic characteristics of this material — speed, economy and efficiency in mass production and distribution. Contributing factors to the popularity of this relatively new commercial metal are its inherent advantageous lightness, high tensile strength, corrosion resistance, electrical conductivity, thermal conductivity, workability, ductility, malleability and pleasing appearance.

Aluminium rods and shapes extruded in long lengths in the New Plymouth factory will be found in the manufacture of aluminium ladders, boat and caravan construction, furniture, and where extrusions are used as structural supporting members for sheet used as panels and aluminium sections for window frames.

Other Departments

Complementary to the entire plant are the toolroom, electricity sub-station, physical and metallurgical laboratories, chemical laboratory, 20 ton weighbridge and main office.

The toolroom takes pride of place in this factory. Die making is most exacting precision work and for the preparation of extrusion and drawing dies in normal alloy steels a variety of conventional machine tools are used. However, for hard metals such as Nickel-cobalt iron alloys and for Tungsten carbide, materials having an increasing application for extrusion and drawing dies, a special electronic spark eroding machine is employed.

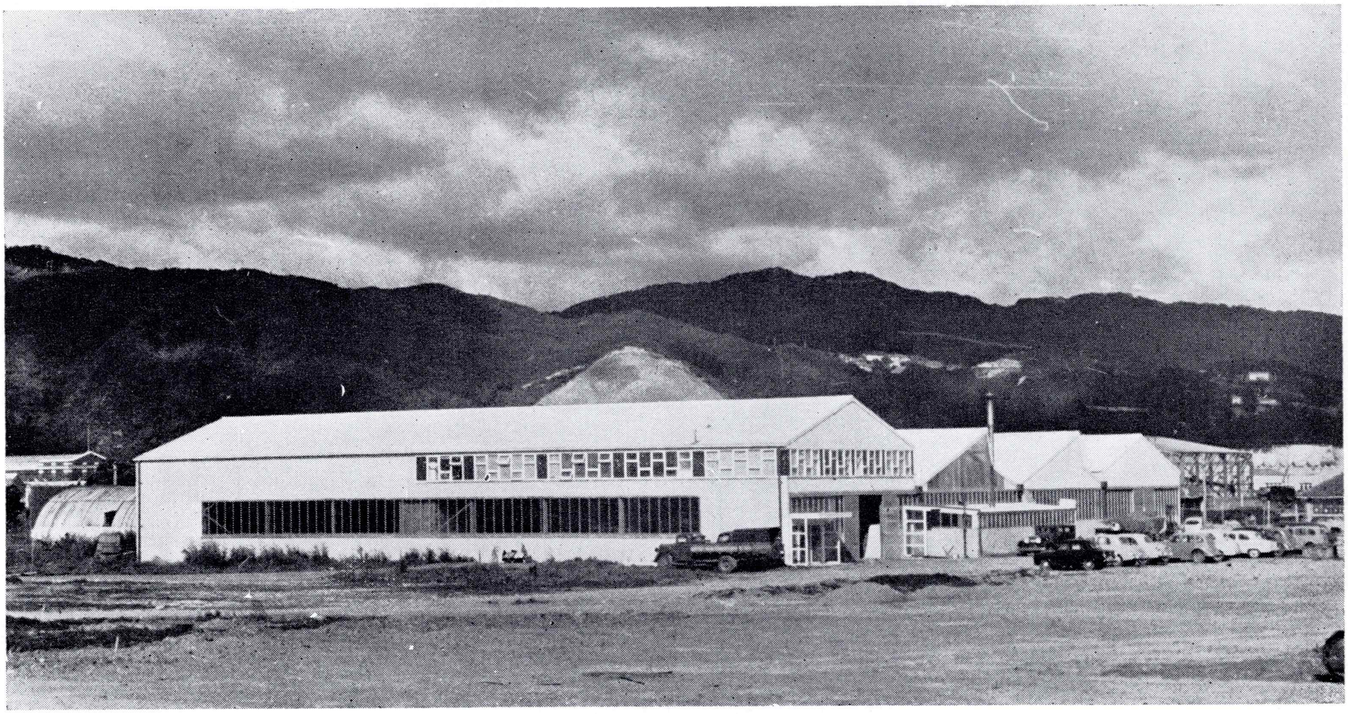
A laboratory staff of chemists constantly check the composition of all new and scrap metals before use and of every alloy cast. Extruding temperatures are recorded from a radiation pyrometer, while annealing temperatures are controlled by means of bi-metal recording thermocouples. Thus a strict metallurgical control ensures a quality product equal to the best overseas production.

Nationally important

Prior to 1953 every foot of aluminium and brass rod was being imported. The establishment of this workshop and foundry has, therefore, broadened the whole industrial basis of the Dominion. Likewise, its national importance is evident in the saving of overseas exchange by using scrap non-ferrous metals, and, for brass products, importing only a quarter to one fifth of its raw metal requirements. Then, too, it provides employment throughout New Zealand for a number estimated at 10 times that of the Company's own staff of 150. Proof of this rests in the fact that extruded products from this factory find their way throughout the country for conversion into hundreds of household articles and machined parts.

It is McKechnie's pricing policy to avoid, as far as circumstances will allow, the many frequent and substantial fluctuations which have been characteristic of world trading in copper and copper alloy products. As proof of this, and substantiating the claim that the Company fulfils a very definite role in the country's economy, prices for the Company's brass products changed no more frequently than an average of six times per year over a recent three-year period.

THIS VIEW of the interior of McKechnie Bros.' works gives an excellent idea of its size.



MODERN FACTORY BUILDING of 35,000 sq. ft., in Port Road, Seaview, Lower Hutt.

Tube products and other quality articles

THE SOUTHWARD ENGINEERING CO LTD

Manufacturing Division of N.Z. Tube Mills Ltd, Seaview, Lower Hutt

Although the Southward Engineering Company was formed in 1940 at 2 Lloyd Street, Wellington, Mr. L. B. Southward, the Managing Director, had, from 1926, successfully conducted a motorcycle repair business, and, in 1935, had managed his own repair garage for light cars. The first items produced at the Lloyd Street plant were rear vision mirrors, a small quantity of mufflers for the then very popular Austin 7, fire shovels, and miscellaneous parts made under contract press work. Plant was in very short supply at this period, and, except for a 20-ton power press, the only other presses obtainable were on loan from the Shell Co. and J. C. Hutton Ltd. These machines were subsequently purchased after the war.

War production included the manufacture of miscellaneous parts for bren-gun carriers, army cable reels and aerials for the ZC1 transceiver project. During 1942 the firm was asked to manufacture 6 lb. bully beef cans, and a semi-automatic line was set up which was subsequently sold.

Steel Tube manufacture

In 1940, without prior knowledge of manufacturing methods, a truck rear vision mirror was designed. However, due to import control there was insufficient tubing available for the mirror arm, so attempts were made to discover how tubing was manufactured, and thus produce some. In this respect, it is very interesting to note that a friend of Mr. Southward, Mr. Norm. Brasch (who was then a tool maker at D. P. Fisher Ltd.), was asked how tubing was manufactured. His reply was, "I think they drag a strip through a hole." This method was attempted by pulling a strip of tin plate through a nut. A suitable drawing die was made and the first mirror production, incorporating tube, was made by this method.

A Wellington engineer, Mr. Roy Pearce, later suggested using a roll strip mill for forming the tube, and this principle was eventually adopted.

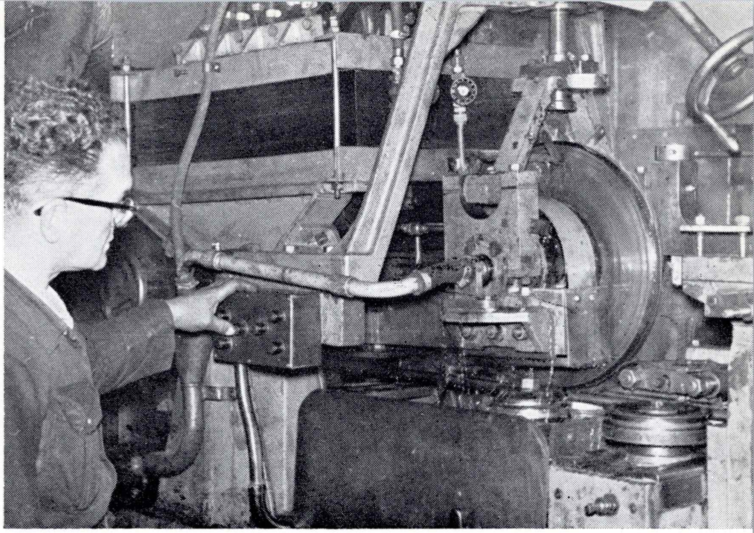
The roll forming of tube is a gradual method of bending flat strip into a circular tube by using a series of progressively rounded rolls. Steel is purchased in a strip of approximately two-ton coils and, after slitting to the correct width for the diameter of the tube required, the flat strip is fed into the roll forming unit. It gradually assumes a tubular shape by passing between five sets of male and female rolls. After the rounded tube is formed, the seam is welded and the tube straightened and oiled.

Originally, the seam was welded with oxy-acetylene gas, but, due to the restriction on speed by using gas, an electric welding unit was built by the firm from designs obtained in England. This unit was incorporated in the machine between December, 1957, and January of the following year. Some four weeks later, the machine was destroyed by fire.

Factory premises

The original Lloyd Street building of 3,000 sq. ft. was soon found to be inadequate when the tube mill was built in 1945. Consequently some floor space was rented in Messrs. C. W. Martin & Co. Ltd's. building in Tory Street. Other space was rented about half a mile away in Hankey Street, and here steel coil was first slit and then transported to Tory Street. It was obvious at the time that this arrangement was not economical and the firm's factory space problem seemed to be solved when a lease was obtained in 1949 for 15,000 sq. ft. of a Government store at Gracefield, Lower Hutt. The Tory Street, Hankey Street, and Lloyd Street plants were gradually shifted to Gracefield, leaving only a perambulator wheel plant at Lloyd Street.

The new premises at Gracefield allowed an increase in the range of products, and by 1956 the 15,000 sq. ft. used in this building was inadequate for the production required. Suitable land was bought at Seaview, Lower Hutt, and in 1957 a contract was let for the building of a 7,000 sq. ft. steel store. Only the floor, steel wall, and roof beams had been erected when the Gracefield plant and buildings were destroyed by fire on February 14, 1958. It was then decided to increase the size of the new premises being built at Seaview and a further contract was let for the work. The new buildings were completed and the plant reconditioned during the winter of 1958. Tube was again in production from the tube mill just three months after the fire and a full range of products was being manufactured by the end of that year. With buildings now totalling 35,000 sq. ft. and approximately three acres of land available for future expansion, it is hoped that further space problems will be a thing of the past.



TUBE MILL 150 KVA WELDING UNIT: Large copper discs (seen in centre of photograph) transmit the power from the transformer for the resistance welding of the tube.

Products to meet your needs

Prior to 1958, steel tube was free from import control and duty (it is still free from duty) and all tube manufactured and sold was in competition with the imported line. It is hoped to have a second tube mill in operation early in 1960, to be able to cope with the New Zealand market on a shorter delivery basis than is now possible with a single machine.

Tube bending is done on three hydraulic bending machines, the main product being exhaust pipes for motor vehicles. The machines are automatic, except for loading, and are among the most modern of this type in New Zealand.

Perambulator wheels were first manufactured in 1942; tangent spoked wheels are now made and a full range of sizes produced for the New Zealand market.

Rear vision mirrors for motor vehicles are made in 10 different types under the trade name of "Lesco."

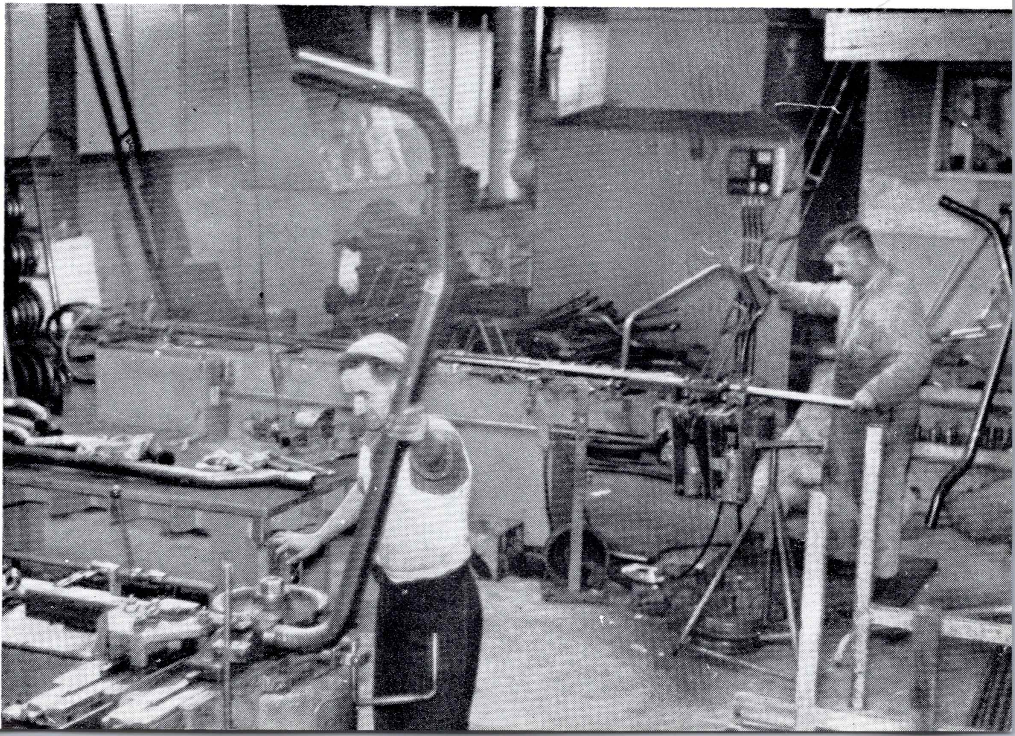
The "Lesco Pour-A-Can," a petrol can of revolutionary design, is manufactured under licence. These cans have proved popular owing to their easy storing and leak-proof propensities.

Motor vehicle exhaust mufflers have been manufactured since 1950 and are supplied as a genuine spare part to motor companies.

Offal burners are a new line being made under licence. The burner is oil fired and the offal boiled so as to reduce the incidence of hydatid.

Several new products are planned for the future and it is confidently expected that the present range will increase still further in popularity. The firm's policy has always been to make a quality article on a competitive price basis with overseas or locally manufactured articles and it is hoped that this policy will always assure a ready market.

Over the last 20 years the personnel has increased considerably. From a beginning with two men in 1940, the staff has increased to just over 100. The accountant, Mr. S. R. Muir, joined the firm in 1947; the Factory Manager, Mr. J. E. Meadowcroft in 1951; and the Tube Department Manager, Mr. E. A. Rogerson, in 1946. Presentations of watches to staff members who have completed ten years' service with the Company, have been made over recent years. Six men have already qualified. The members of the staff appear to be a happy and contented family and this is borne out by the labour turnover, which generally never exceeds 5% annually.



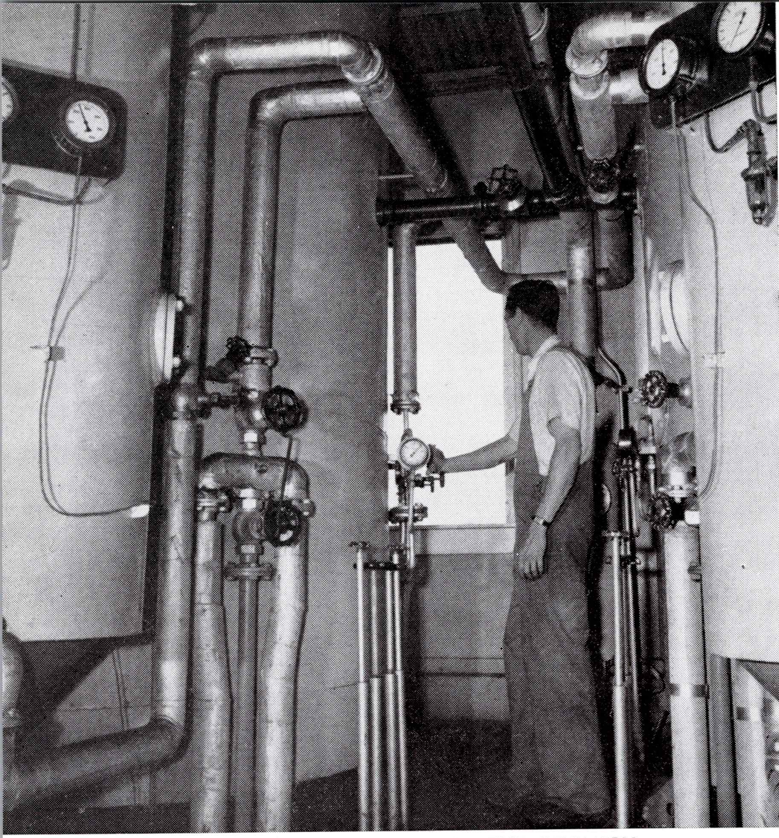
TUBE BENDING: A view showing the hydraulic tube bending machines, which are capable of bending tubes up to 2½" in diameter.

PART B

Food,

Beverages,

Tobacco, etc.



A SMALL SECTION OF THE REFINERY

ABELS LIMITED

Carlton Gore Road,
Newmarket, Auckland.

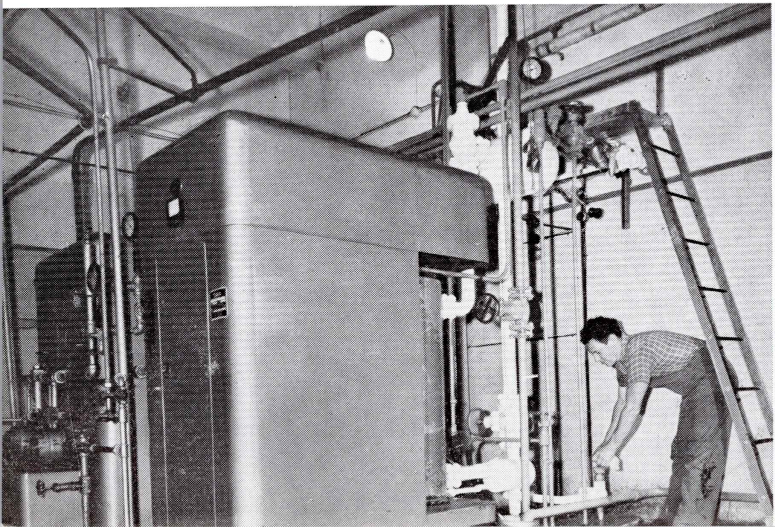
Abels Limited of Carlton Gore Road, Newmarket, Auckland, can be justifiably proud of participating in the fats and oils industry, an industry which contributes much to the economy of the country. In 1920, the late George Handson Abel came from Australia to Auckland and formed a company to manufacture margarine for baking purposes. Mr. Abel was a master baker and had also spent some time in association with his brother, who had commenced a margarine factory in Sydney in 1908. Therefore, he came with a thorough knowledge of the requirements of the baking trade and with first-hand information of the product he proposed to make. The margarine produced in Australia was oleo margarine, that is, the basic raw material was edible beef fat, with which were blended vegetable oils. Edible beef fat in the form of beef premier jus, beef oleo, dripping and edible beef tallow was available in New Zealand in good quantities and the proposal was to make the best use of these supplies. Up to this time, limited quantities were being used in the various food-manufacturing industries but such untreated materials could never give entirely satisfactory results. The surplus beef fats were exported and treated overseas to raise their quality and increase their usefulness. From the beginning, Abels Limited, by its scientific treatment of fats, set a new standard and it was not long before the inferior fats were for the most part displaced by Abels Limited's "Morah" margarine.

The improving of the quality of locally-produced fats and their utilisation to the maximum within New Zealand, is a sound economic policy and one which has always been pursued by Abels Limited. New processes developed by the Company have reduced the percentage of imported materials necessary, until today over 98 per cent. of the raw materials used are produced in New Zealand or in Pacific territories controlled by, or closely associated with, New Zealand. For this reason, this industry may well be classified alongside the major primary industries.

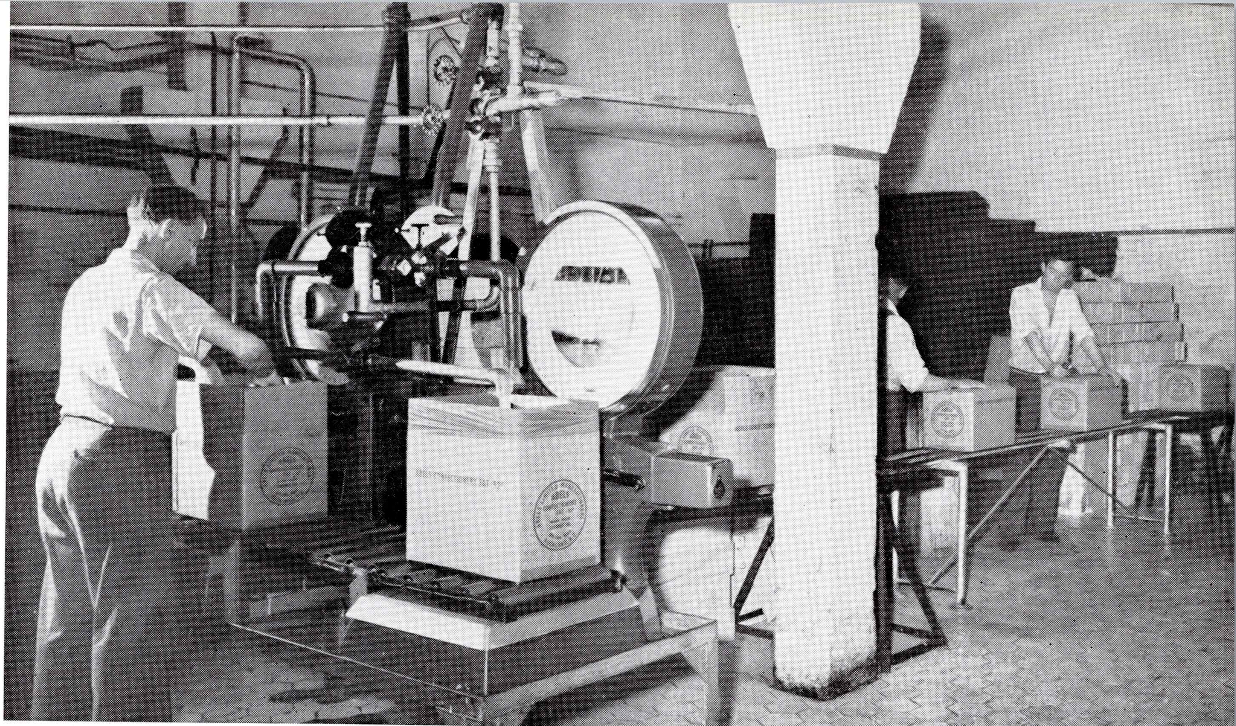
For the first five years the Company had a somewhat limited supply of raw materials because only certain classes of beef fat could be treated. However, in 1925, a modern refining and deodorising plant was installed and this increased the variety of fats which could be successfully handled. All beef fats used by Abels Limited have a Government inspection certificate that they are fit for human consumption. In 1928, the Company commenced the manufacture of a bakers' compound, competing with similar lines which were being imported. This called for a large percentage of imported vegetable oil—a policy incompatible with that of the Company to use to the full extent local materials, but one forced on it by competition from overseas. The manufacture of this line ceased in 1942.

In 1931, it was decided to install a hydrogenation plant for fats and oils. Briefly stated, this process combines hydrogen with a fat or an oil, raises the melting point and gives much greater stability to the finished product. Development of this process had proceeded apace overseas and substantial quantities of hydrogenated fats were coming into New Zealand for purposes for which there was no locally produced alternative. One of the chief oils being hydrogenated was coconut oil and Abels Limited decided to enter this field, knowing that there were large supplies of copra (from which coconut oil is derived) available in New Zealand's own territories of the Cook Islands, Niue and Western Samoa, virtually locally-produced. To go the full distance would have meant the installation of an oil-mill to crush copra, so it was decided to be content at that stage with the hydrogenation plant only and to import coconut oil from associates in Australia. There was no problem in the treatment of coconut oil before and after hydrogenation (or hardening), as the existing plant for handling beef fats could be easily adapted. The policy

MODERN FAT-TEXTURISING UNIT



TEST BAKING — A corner of the laboratory



FILLING AND WEIGHING
hydrogenated vegetable fats.

Photographs by Barry McKay.

was to build up sufficient trade to ensure that an oil-mill would be an economic proposition, taking into account the Company's own requirements for coconut oil from this new business plus the potential market of the quantities being imported by other industries.

In 1939, the decision was made to proceed with the erection of the oil mill but, owing to delays, production did not commence until 1940. All the copra used comes from the three sources mentioned above and the industry in New Zealand has a sound economic basis. Apart from the hydrogenation of coconut oil for the confectionery and baking industries and the production of the well-known vegetable fat "Kremelta", three grades of coconut oil are supplied for the local market—crude, refined, and refined and deodorised—their chief uses being for soaps, cosmetics and medicinal preparations. The residue of the copra after extraction of the oil is a valuable stock-food and has greatly reduced the quantity of copra meal which would otherwise be imported.

One of the manufacturing processes in the treatment of edible beef fats for margarine is the extraction of the higher melting-point component, edible beef oleo stearine. Surpluses are exported but, here again, the Company uses its own by-product from one process as the raw material for other products. Stearine is hydrogenated to become hardened stearine, the uses for which are many—in milk-powder bread improvers, as a weather-proofing agent, as an addition to soaps and lubricants, and as an alternative to certain waxes.

The cycle is not yet complete because hardened stearine becomes the raw material for glyceryl monostearate (G.M.S.), which the Company commenced to produce in 1953. G.M.S. is a super-glycerinated fat produced by the chemical combination of fat and glycerine and it has an affinity for fat and for water. Hence it is used extensively as an emulsifying agent, particularly in food manufacturing industries. Glycerine is present in all fats and oils and during soap making becomes a recoverable by-product. Strange as it may seem, some of the glycerine used for G.M.S. will be from coconut oil supplied by the Company to the soap making industry!!

A recent development in the baking industry is the manufacture of high-ratio cakes — those delicious, light, tender cakes called by fancy names such as "Devil's Food". Their manufacture is dependent upon a shortening with a high emulsifying factor. This is called high-ratio shortening and contains a proportion of G.M.S. Again, Abels Limited has produced the shortening for the job—Abels "Hi-Mix" Shortening—and, again, the materials used are nearly all locally produced. This is the Company's latest product and sales commenced late in 1954.

The Company maintains an excellent distribution service throughout New Zealand. Stocks of most products are held at 14 main centres and are replenished by weekly transfers of fresh supplies from the head office and works in Newmarket. In addition, wholesale merchants in almost every city and town carry stocks. Practically all of the products are sold in bulk to manufacturers and the industries drawing supplies include baking, biscuit, confectionery, ice-cream, dried-milk, soap and cosmetic. Is it any wonder that during the war this fats and oils industry was declared essential? Abels Limited supplied large quantities of cooking margarine and hydrogenated fats for use in the Pacific area.

The handling of fats and oils has many pitfalls and laboratory and technical control is essential if the finished products are to reach and maintain a high standard. There are also vast virgin fields awaiting the research chemist. The laboratory of Abels Limited is well equipped with a qualified staff, apparatus and an excellent reference library. Apart from established routine tests, much work of an exploratory nature is carried out, with particular emphasis on the use of locally-produced fats and by-products.

From a small beginning, the Company has continued to expand around the original site by acquiring adjacent properties in Carlton Gore Road, Newmarket. The first factory was placed at the rear of the property and the growth has been towards the road frontage on which now stand the latest and most modern buildings, making an impressive appearance. Inside the factory buildings there is much heavy modern machinery, which is kept up-to-date and interlaced with a network of pipes and valves for steam, water and fat.

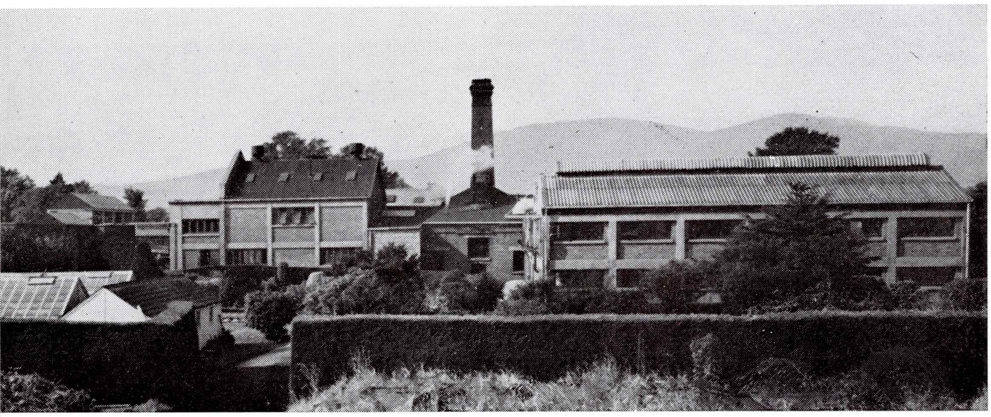
The Company can boast of many long-service directors and executives. Mr. E. S. Wolfenden, Chairman, has been a director since the Company commenced; Mr. Stuart H. Abel (son of the founder), Managing Director, has had 23 years' service; Mr. E. P. Hobbs, Director/Manager, 37 years' service; Mr. D. R. Fairgray, Director/Secretary, 32 years' service; Mr. J. A. Gentles, 37 years' association, first as Secretary, then Auditor, and now Director; Mr. R. C. Crebbin, Director, has been indirectly connected through an Australian Associate for over 20 years. There are also numbers of executives and other employees who have had from 20 to 35 years' service.

Founded as it has been on such sound fundamental principles, this industry must surely continue to contribute in no small measure to the economic welfare of New Zealand and her Island Territories and thus assist our people to greater prosperity and enjoyment by literally living on the fat of the land.

New Zealanc

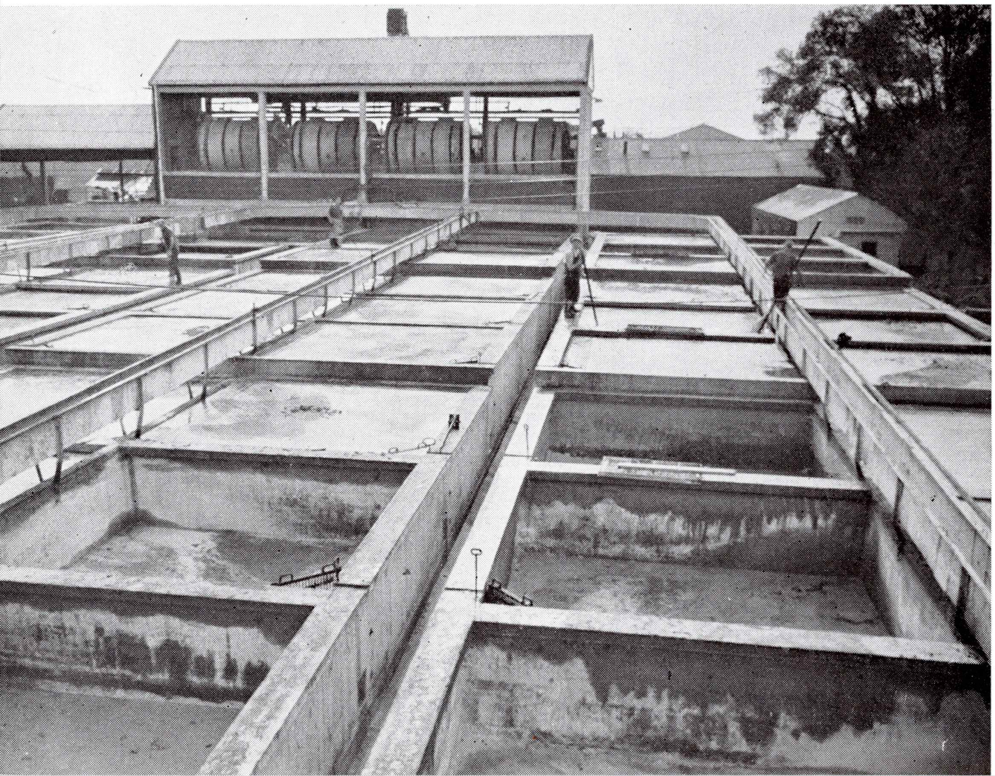
DAVIS GELATIN

Connal St. Woolsto
Branch: Onehung



(Above): GARDEN SETTING for the Davis Gelatine factory, Woolston, Christchurch. Davis domestic packets of gelatine are known throughout the Commonwealth. *Photos: Frank McGregor.*

RAW MATERIAL WASHING DRUMS AND TREATMENT TANKS. *Photo: Frank McGregor.*



The present industry had its beginnings in 1881, struggled for many years to keep alive, and then, with better times, cradled the Davis Gelatine Organisation in Australia, South Africa, England and Canada. Indeed, the Davis domestic packets of gelatine are known and esteemed as far afield as Ceylon, Hongkong, India, Pakistan, Mexico, Thailand, the West Indies, etc. New Zealand may well be proud of having been the birthplace of these world-wide developments. The lusty sons have outgrown the parent, but the latter has kept abreast of technical progress and is well capable of taking care of all the wants of the Dominion.

A Highly Scientific Process—

Gelatine is manufactured from collagen, a substance found in the skin tissues of cattle, sheep and lambs. To convert collagen to gelatine is a highly scientific process and takes six to eight weeks of day-and-night treatments. All stages must be carefully controlled to ensure a finished product of optimum purity and perfect standardisation. Additional to the use in the house for making salads and dainty desserts, gelatine finds commercial application in jelly crystals, confectionery, biscuits, ice-cream, jellied meats, crystallised fruits, winemaking, baking, foods for infants, pharmaceuticals, bacteriology, etc. Other non-edible grades are designed for coating photographic films, making printers' rollers, stiffening straw hats, textiles and artificial flowers, sizing paper, maps and feathers, glazing pottery, frosting glass and moulding plaster casts.

Food Value of Gelatine—

Edible gelatine is the best protective colloid known to science and is referred to as a protein food, containing as it does many of the substances which the body requires to build muscle and tissue. It is rich in lysine and glycine, amino acids which, respectively, promote growth and energy. By reason of its facility to aid digestion, it is combined with milk, eggs, cream and fruit juices in the dietaries of hospital patients, invalids and infants.

Gelatine Industry
(N.Z.) LTD.
Christchurch
Auckland

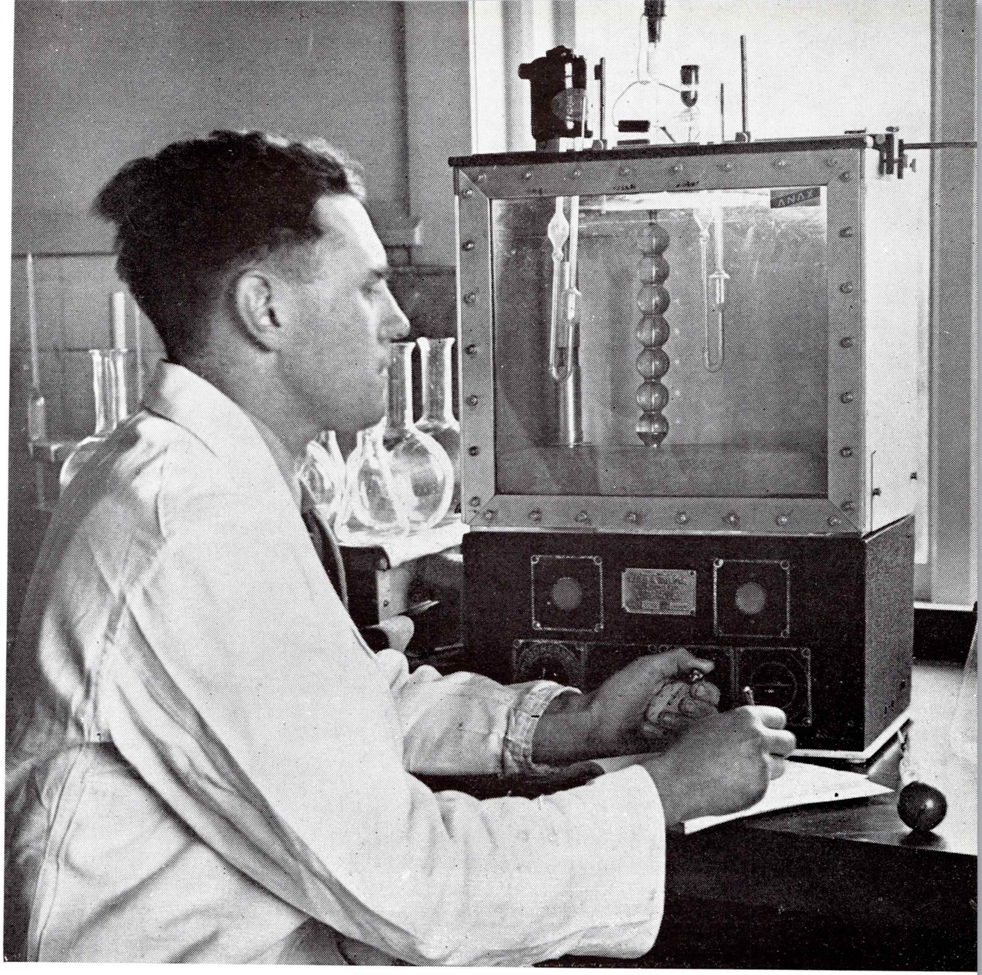
Agar—

Agar (vegetable gelatine) is another Davis product of some importance. Of exceptionally high quality, made from selected New Zealand seaweeds, it is recognised as the world's best for growing bacteriological cultures. Quite a lot of agar also enters into canned meats, confectionery and emulsions.

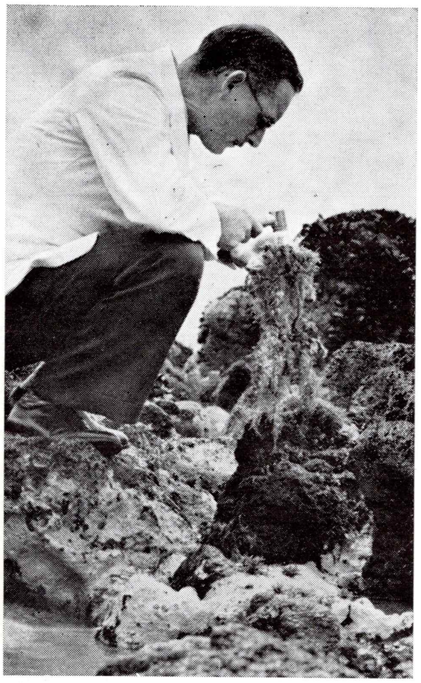
Animal Glues, Vegetable Adhesives—

The Davis factories at Christchurch and Auckland make a full range of animal glues and vegetable adhesives. Their uses are legion—for furniture of all kinds, tennis rackets and other sporting goods, abrasive cloths and papers, matches, sizes for carpets and other floor coverings, sealing packets and cartons by hand or machine, bookbinding, wallpapering, gummed tape, padding . . . there seems to be no end to their versatility. There are glues for use in the shearing shed and pastes for the office and home. Each has particular properties suited for the application.

It can be truly said that the New Zealand gelatine and glue industry is a national asset, manufacturing for manufacturers.



TESTING VISCOSITIES in the Davis Gelatine laboratory. *Photo: V. C. Browne.*



(Below): COLLECTING SEAWEED, the raw material for the manufacture of Agar. *Photo: V. C. Browne.*

A modern New Zealand Cigarette Factory

ST. JAMES'S TOBACCO COMPANY OF NEW ZEALAND LTD.

Great South Road, Penrose, Auckland

Located at Penrose, Auckland, in the heart of the industrial area, is New Zealand's most modern cigarette factory. With a capacity to produce millions of high quality cigarettes daily, this factory was first built in 1949 and extended considerably in 1956.

Whilst cigarette manufacturing machinery has, to a large extent, become standardised across the world, there have been many new developments which have revolutionised methods of manufacture and packing over recent years. The St. James's Tobacco Company has always insisted on keeping up to date with these developments through its association with an international tobacco organisation, and some of the most modern machinery has been installed in the Auckland factory.

Modern cigarette-making machinery is designed for high speed mass production, with an extremely high standard of uniformity in the finished product. For example, some of the machines used by the St. James's Tobacco Company to manufacture filter tipped cigarettes can produce these perfectly-made cigarettes at the rate of 1200 every minute. Similarly, with packing machines, considerable advances have been made over recent years to produce better made and more quickly filled packets for cigarettes. The introduction of the crush-proof, hinged-lid box some years ago was an innovation that has swept the world. St. James's Tobacco Company takes pride in being the first to introduce this type of pack to the New Zealand market. Packing machines are employed which can pack 120 packets of 20 cigarettes every minute. These are then passed to a machine which seals the pack with a moisture-proof cellophane. These machines can wrap the packets at 200 packets of 20 every minute.

It can easily be envisaged, then, that cigarette manufacture is a high speed process, calling for the maximum mechanisation. Whilst it has not yet been achieved, the day of the fully automatic cigarette factory cannot be far distant. St. James's Tobacco Company is working to this end and has already achieved a high degree of mechanisation.

Skilled craftsmen

Machines are, however, only as good as the people who operate them, and much of the ability of producing first class cigarettes lies in the know-how for the treatment and processing of tobacco leaf. Key personnel of the St. James's Tobacco Company undergo extensive training overseas before they are considered eligible to command positions of authority. Many of the men concerned have had a lifetime of experience in tobacco. Even so, modern mechanical developments and the introduction of electronic systems demand that these personnel be kept up to date with the latest overseas developments. This is done through St. James's Tobacco Company's overseas associations.

Quality of raw materials

To complete the combination of men and machinery to produce a first-class cigarette, it is necessary to begin with first-class raw materials. All the tobacco used by the St. James's Tobacco Company is most carefully selected. The majority of it comes from the famous tobacco fields of America—Kentucky and Virginia. This tobacco, which is truly the original Virginia, cannot be surpassed anywhere in the world. Bought by tobacco brokers, working under the direct supervision of St. James's Tobacco Company personnel, the tobacco is bid for at the large American tobacco auctions which are held each year at the completion of the harvest. This sun-browned, golden leaf, grown in the sunny valleys of the Southern States, is then left to mature in the cask, or hogshead, for approximately 18 months to two years. On reaching maturity, it is shipped to New Zealand.

The best tobacco grown in New Zealand comes from Motueka, in the Nelson Province, where climatic and soil conditions are ideally suitable for tobacco growing and where a very high standard of tobacco leaf is produced. The tobacco is grown by independent growers, who contract each year to grow for the major tobacco manufacturing companies. Over the years, St. James's Tobacco Company has been at pains to contract only with those growers who have the best land and the ability to produce the "top of the crop", so that only the best is bought. St. James's have been famous for paying top prices for the best of the New Zealand-grown tobaccos.

Only the finest cigarette paper, made in France, is used. The cork tipping is specially imported, together with the glues and gums that are used. In the standard of printing for the packets, special attention is paid to appearance and quality presentation.

Quality of manufacture

Many things go into the making of a quality cigarette —know-how, materials, machinery. The quality and uniformity of production is controlled by constant inspection and by weight and dimensional checks. The weight factor is of the utmost importance, since this ensures that the correct amount of tobacco goes into each cigarette. Weight specifications are laid down to ensure that each cigarette is well packed and well filled. Constant checks are also made on the length and diameter of the cigarettes. In addition, moisture content of the tobacco must be just right—not too much, not too little. Electronic devices are used to give instant moisture content readings of the tobacco and cigarettes as they pass through the various stages of manufacture.

Quality control

Since St. James's Tobacco Company manufactures cigarette brands with a world-wide reputation, it is necessary to ensure that the standard of production in all countries is similar. Accordingly, elaborate steps are taken to achieve this end. Before a bulk production run on any brand is made, samples are taken from the tobacco and despatched, with speed, by air freight, to a central Tobacco Testing Laboratory in London. In this laboratory, the samples are subjected to the most exacting scientific tests and careful scrutiny by experienced chemists. Nicotine and tar content is determined. Weight ratio to specification is tabulated. Smoking tests are carried out by scientific instruments and, when the final results are tabulated, these are cabled by code to Auckland. Only when these tests have been passed can bulk production commence. This ensures the correct standard of quality.

In addition, there is a strict routine for day-to-day quality control. Each cigarette is tested by no less than ten people during its journey through the manufacturing processes. Magnetic detectors are fitted to all tobacco processing machinery; electronic eyes are constantly on guard to detect any cigarettes which fall below the standard; the supervisory personnel exercise a constant vigilance, checking, checking, checking.

Not being satisfied with this checking, all cigarettes are then inspected before they are packed by trained operators. This is known as the "picking" process, where cigarettes which are not exactly to the standard are discarded. Furthermore, each and every cigarette made is date coded so that the date of manufacture can be readily traced.

Research and development

Before the cigarette is made, the tobacco leaf has been examined most minutely. Each grade and type of leaf has been tested to determine its texture, its flavour, its aroma, its colour, its nicotine, and its tobacco tar content. These

ST. JAMES'S TOBACCO COMPANY OF NEW ZEALAND LTD.

Photo: Hill-Thomas

results formulate the basis for producing the correct blend of various leaves to produce the high standard of smoking perfection aimed for, and characteristic of, the famous brands made by St. James's Tobacco Company.

A variety of mechanical devices is employed in the tobacco smoke research laboratory to simulate the action of a human being smoking a cigarette and to permit comparisons between results of different tests. From these tests, a scientific understanding of the methods by which a cigarette is smoked can be tabulated. From them nicotine and tar content can be controlled. These mechanical devices, or smoking machines, are most important in the development of filter-tipped cigarettes. St. James's Tobacco Company has been associated with the pioneers of filter-tip smoking, who produced the world's first filter-tipped cigarette made by modern methods — the renowned du Maurier cigarette. As a result of this research, much has been achieved to improve the enjoyment of smoking.

Other factors on the scientific side also have to be taken into account. For example, the burning time of various tobacco leaves plays an important part in the enjoyment of a cigarette; the temperature at which the tobacco burns enabling a cool, smooth smoke to be enjoyed. The consistency of burning and the whiteness of the ash are also important.

Customer services

The cigarettes' journey from the factory to the shop is undertaken by wholesale distributors. St. James's Tobacco Company utilise only those wholesale firms which, through their efficiency and organisation, can give a ready service to individual shops. These wholesalers, located in all cities and larger towns, hold bulk supplies. These stocks are regularly inspected by representatives of the St. James's Tobacco Company, and, through the date coding system referred to previously, correct stock control and rotation is exercised, so that at no stage can old stock be held. Similarly, in the shops; the shops are constantly visited and stocks inspected. The customer can, therefore, feel assured that any St. James's Tobacco Company products which he buys are taken from fresh stocks.

The representatives of St. James's Tobacco Company are highly skilled and experienced salesmen who constantly call on the shops. They are trained to assist the retailer to promote his cigarette sales and they are supplied with attractive sales aids to this end. They have many friends—retailers who appreciate their friendly service and advice and who know they can count on "the man from St. James's".

St. James's Tobacco Company 'Firsts'

Among the many famous cigarette brands made by St. James's Tobacco Company are du Maurier, First Lord, Albany, and Peter Jackson. These cigarettes have a world-wide reputation for quality. St. James's also make the famous Kauri tobacco.

Among the marketing "firsts" which are credited to this Company are:—

The first filter tipped cigarette made in New Zealand—du Maurier.

The first King Size cigarette made in New Zealand—First Lord.

The first cigarette in New Zealand packed in the modern crush-proof box—First Lord.

The first to re-introduce tins for fine cut tobacco—Kauri.

The first filter tip King Size cigarettes made in New Zealand—Albany.

These examples of virile marketing have formed the foundation for the ever-growing popularity of the brands concerned.

ADAMS BRUCE LTD.

HEAD OFFICE:
27-29 MAJORIBANKS STREET, WELLINGTON.
ALSO: AUCKLAND, NAPIER,
PALMERSTON NORTH, CHRISTCHURCH.

WRAPPING QUEEN ANNE BOXES: Queen Anne chocolate boxes are wrapped in their well-known and distinctive coloured film wrappers by the machine pictured (right). This British machine is capable of high speed work—almost 4,000 boxes per hour—and can be adapted, by the changing of parts, to wrap several sizes of box. The cellulose film used is of the heat sealing, moisture-proof variety to give maximum protection to the perishable commodity being handled.

The company of Adams Bruce Ltd., originated in Christchurch in 1921, the shareholders and founders of the firm being Messrs. Ernest Adams and Hugh Bruce. Soon after this, the Head Office was shifted to Willis Street, Wellington, this being transferred to the present premises in Majoribanks Street, in 1926.

In the same year, a chocolate factory was started in College Street, Wellington, and Queen Anne chocolates were first produced for the New Zealand market. This factory, with later additions, still produces all the Queen Anne chocolates and allied confectionery for distribution throughout New Zealand.

In 1929 Auckland premises were acquired, the business of Adams Bell Limited being purchased, including premises at Collingwood Street, Ponsonby.

A factory was opened at Napier in 1948, premises being rented until the opportunity occurred to build a more suitable bakehouse. This was accomplished in 1956, when a modern bakehouse was erected for this branch.

In 1949, a factory and office premises were purchased in Palmerston North, thus extending the de-centralisation policy of the company and enabling same-day deliveries to be made to an extended number of shops.

An ice cream factory was established in Christchurch in 1951 to allow ice cream to be distributed to shops in the South Island. Ice cream and chocolates only are marketed in the South Island.

Thus the company now has six factories—two in Wellington and one each in Auckland, Napier, Palmerston North and Christchurch. It has a total of 64 shops, comprising 61 through the North Island and three in the South Island. A total of 208 shop employees are on the rolls and, with approximately 127 factory workers and 26 office employees and executives, the total number employed amounts to 361.

The present directors are Messrs. H. W. Reed (Wellington) and J. S. Rhodes (Auckland).

The following goods are manufactured and supplied to Adams Bruce retail shops and to many other retailers throughout New Zealand:—Chocolates and confectionery, ice cream, cake, pastry, biscuits and deep freeze goods.

NAPIER FACTORY OF ADAMS BRUCE LTD., SITUATED AT TARADALE.

ADAMS BRUCE LTD
MODEL CAKE KITCHEN
Queen Anne Chocolates
IN

From humble beginnings to a world-wide market

E. H. LINNELL & CO LTD

11 High St Hawera

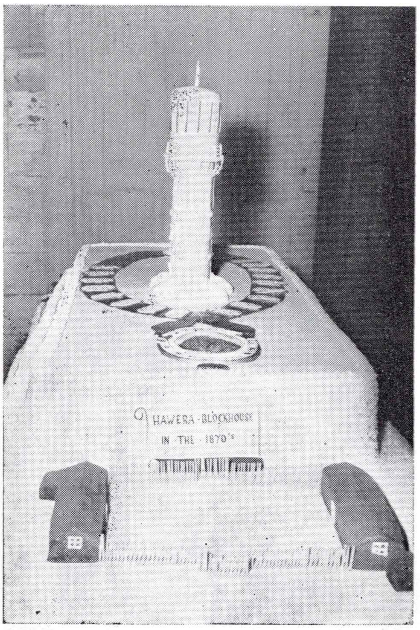
The struggle 'to make both ends meet' on the part of the founder of this Company, now world renowned for its products, was not unlike that of many others of the depression days of the 1930's. Running a humble two-man tearoom business was neither easy nor lucrative, but, assisted by his wife, who undoubtedly possessed outstanding qualities as a cook and whose artistic ability was above average, Mr. E. H. Linnell managed to keep the 'wolf from the door'.

By strange coincidence, a foreigner—a Frenchman by nationality—happened their way. He was destitute and hungry. Over a meal for which he insisted upon paying what he could, the couple learned that he was a qualified chef of outstanding repute come upon very hard times. His appreciation of their kindness was manifested in giving them invaluable tuition in the art of cake decorating—an art in which he was unquestionably a master. Not only were the lessons offered spontaneously, but, on leaving, he also divulged to them a close secret of a formula which had been handed down from father to son. In this formula lay the secret of the renowned Royalty Almond Paste.

Steadily, a good business was built up. Enquiries for the product came from far and wide, and, eventually, to meet the demand, the limited liability company of E. H. Linnell and Co. Ltd. was founded.

Upon recommendation, Mr. Linnell approached Mr. A. R. E. Horsfall of Marketing Services (N.Z.) Ltd., New Plymouth, to undertake the marketing of the Company's products, which included Royalty Almond Paste, Lemon Cheese, Linnella Products, 'Laymore' Poultry Tonic, Anti-Germ Antiseptic, and Salted Peanuts. The distribution and advertising of these products has received the unfailing attention of this marketing organisation, to the extent that, for instance, 200 lbs. of Royalty Almond Paste was used on a mammoth cake made in Northern Ireland a short while ago.

Today, the business started by Mr. E. H. Linnell is being conducted by his three sons in a substantial factory of 8,000 sq. ft. Their contribution in keeping alive the traditional excellence of these products is evidenced in several instances, not the least of which was the use of a colossal amount of Royalty Almond Paste on a cake weighing one ton for the 75th Jubilee (1882 – 1957) of the Hawera borough.

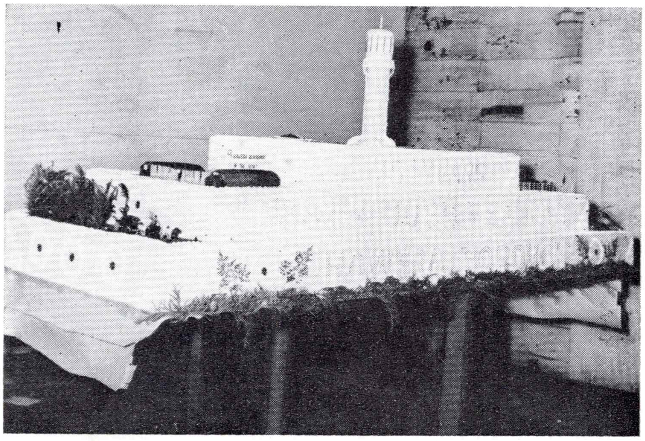


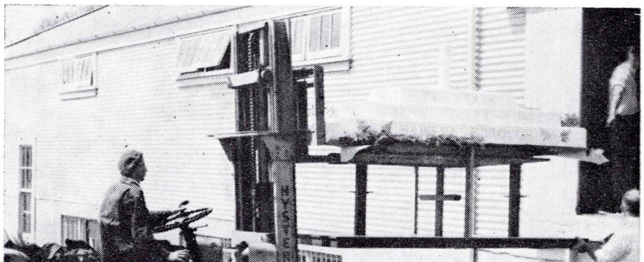
THREE PHOTOGRAPHS of the one-ton cake made by E. H. Linnell & Co. Ltd. for the Jubilee celebrations of the Hawera borough, 1957.

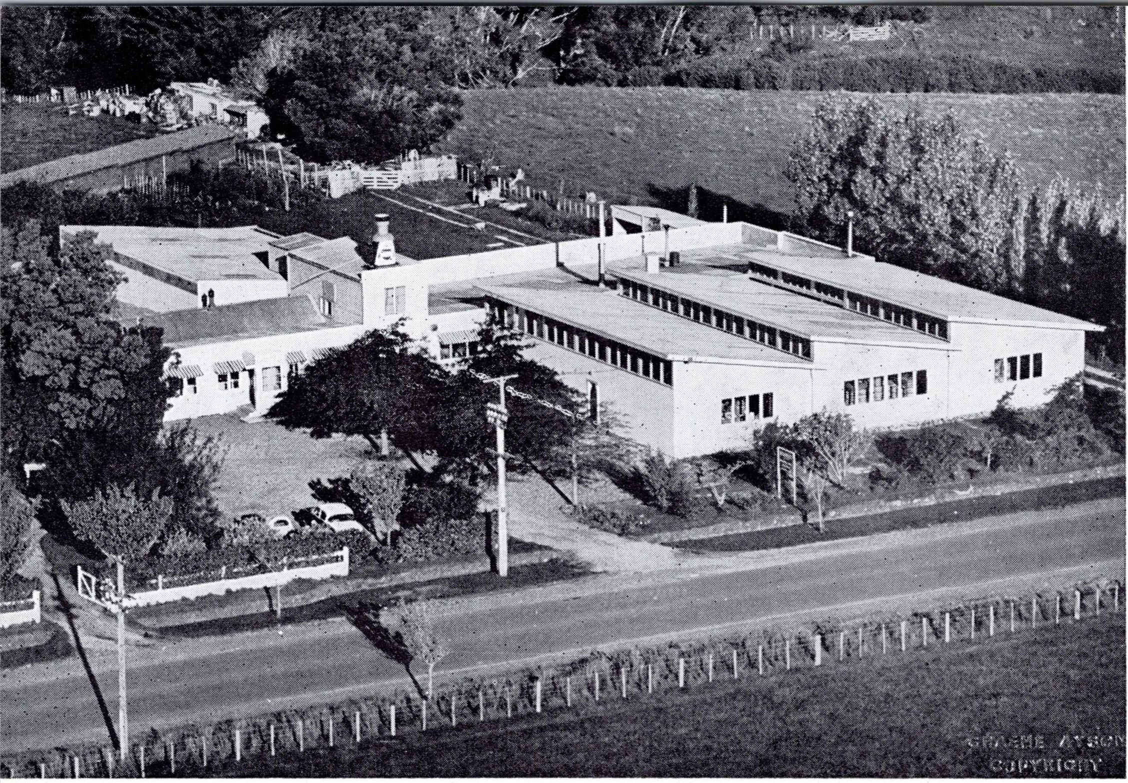
Photos: Armstrongs.

Royalty
ALMOND PASTE
OVERSEAS
Linella
LEMON Delight
DELICIOUS
Royalty
ALMOND PASTE
Royalty ALMOND PASTE

A DISPLAY of Royalty Almond Paste, a product of E. H. Linnell & Co. Ltd. which has been marketed in many overseas countries.







Solid developmen

HANSELL'

Opaki Roa
Masterto

'FACTORY IN THE MEADOW': The factory and offices of Hansell's (N.Z.) Ltd. are situated on Opaki Road, two miles from the town of Masterton, in a rural area.

New Zealand was in the throes of the depression (1934) when the founder of this Company, Mr. L. B. Maunsell, M.C., assisted by Mr. H. Hanson, a qualified chemist, took the bold step of establishing what was to become one of the major light secondary industries in the Wairarapa.

A concrete building previously used for a stud poultry venture initially housed this industry. Competition at the time was very keen, but a new formula which the Company had developed, enabled quality essences of 29 different flavourings to be manufactured at a competitive price.

(Above) **THE STAFF OF HANSELL'S (N.Z.) LTD.** The Managing-Director, Mr. J. H. T. Maunsell, is seated in the middle of the front row. (Below) **THE SALES TEAM**, with Mr Maunsell.

Exhaustive efforts were made by Mr. Maunsell to establish a market for the firm's products. Steady progress was made and prosperity, in turn, brought about the introduction of many new lines. Within five years, the staff numbered 25 (today it is 43). Fully automatic plant has been installed for efficient handling of output and this includes forklift loaders, huge mixers, and automatic packaging, filler and labelling units. Thus, the organisation's efficiency has brought about the establishment of a solid Dominion-wide and overseas market for its quality products.

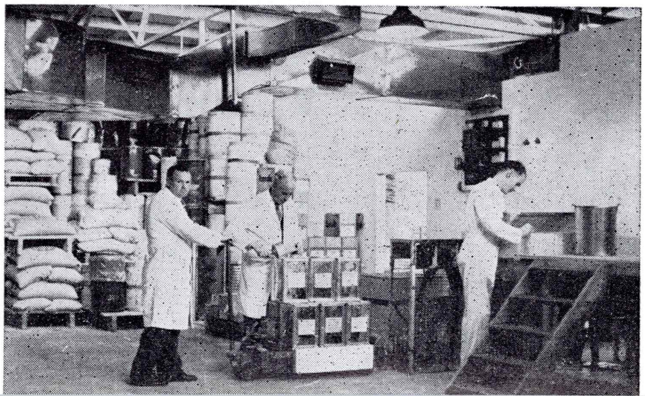
Progress, expansion, achievement

The Company's steady development over the past 25 years must serve as a great encouragement to other manufacturers who may consider the Wairarapa as a new centre for industrial expansion.

The present-day factory is perhaps 30 times larger than the original premises. Back in 1934, there were already several well established flavouring essences on the highly competitive local market. No company starting from small beginnings, as was the case with Hansell's, could afford to operate at any obvious disadvantage. To meet this exigency, Hansell's developed a new formula for Emulsion Essences, which had distinct advantages over any other. Their flavourings remained more stable in quality and strength after cooking. Nonetheless, although good cooks appreciated this advantage readily enough, the battle for acceptance and sales outlets was a hard one in the early years, but Masterton provided just the right type of conditions and staff to fight this battle at the factory end.

Inevitably, as the demand for Hansell's products

A CORNER OF THE POWDER MANUFACTURING ROOM, where 2 cwt. mixes are prepared at a time.



built on teamwork, service and quality

(N.Z.) LIMITED

increased, the Company embarked upon a policy of installing the most modern automatic plant available. World trends in production methods were studied in overseas factories, and new products, painstakingly perfected, were launched on the market when production capacity had grown enough to justify further increases in output.

Today, Hansell's products are not only found in every grocer's store in the Dominion, but also in the Chatham Islands, Tonga, Niue Island, the Cook Islands, Fiji, Samoa and the Solomon Islands. The raw materials imported for use in the Company's factory come from countries as far distant as Portugal, Italy, Sicily, Spain, U.S.A., Holland, France, Germany, Belgium and the U.K.

Research and Laboratory control

The Company has placed special emphasis upon laboratory control and research. All work is carried out under the strict supervision of qualified industrial chemists. New lines and developments overseas are investigated and formulas tested, in order that they may comply with the provisions of the Food and Drug Act.

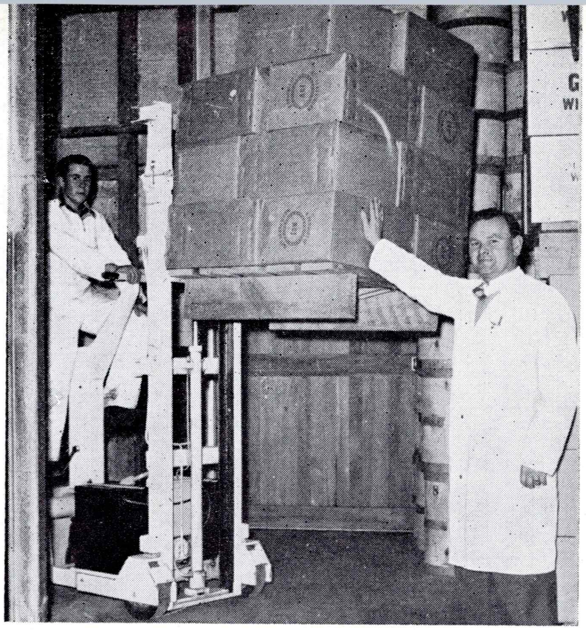
Once essences have been mixed in high speed mixers by an industrial chemist and the water filtered and bombarded with ultra-violet rays, bottles of the prepared mixture are vacuum-filled, capped and corked by a power press which handles 80 bottles in one thrust. Finally, labelling is done on a labelling machine handling 60 bottles a minute.

A further modern technique has been evolved by this Company with its milk shake powders. Powder mixtures are prepared with infinite regard to quality and flavour. Mixtures are then transferred to an automatic filler machine which measures out the milk shake powder and packs the product into moisture- and flavour-proof polythene bags. Finally, the bags are sealed by an impulse heat sealer.

Confident of the future

The significant thing about the growth of Hansell's has been the quiet, steady increase in the popularity of its products year after year. There has been no meteoric rise in the sales of any one of its lines which include essences and flavourings, jelly crystals, fruit drinks, milk shake essences and powders and food flavourings. Instead, it has become plain that, one by one, housewives throughout the country start to use Hansell's essences and cooking aids, and, having once started, they continue to use them. Encouragement of this sort from the general public enables the manufacturer to plan improvements in service well ahead, and also to increase the range of products available. The Company envisages that, with its reliable and favourable reputation, Masterton's "Factory in the Meadow" will start earning money for the nation with sales of high quality essences in open competition on the markets of the world.

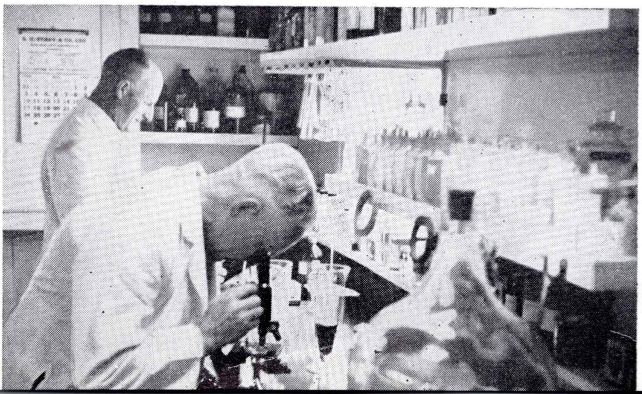
Growing sales and service are not the only things that management and staff think about at Hansell's. They enjoy, too, their heritage of leisure hours in the freshness of a countryside as beautiful and as productive as any in the world.



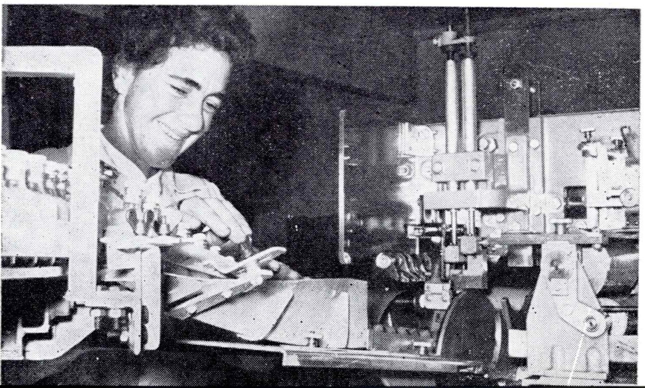
CONTENTS
HANSELL'S
Hansells

(Upper) A FORK LIFT LOADER in use in the bulk store. **(Lower) PACKAGING** Hansell's products.

RESEARCH: The laboratory staff, under the control of an industrial chemist, develop new products and supervise every stage of manufacture.



A STAGE IN THE PRODUCTION LINE: Photograph shows an automatic labelling machine in operation.



A notable success story in the history of New Zealand industry

J. WATTIE CANNERIES LTD

Hastings, Gisborne and Auckland

In celebrating its Silver Jubilee this year, J. Wattie Canneries Ltd. can look back on the remarkable development of the company, which, in the short span of 25 years, has made it the largest diversified food processing organisation in the Southern Hemisphere. With a range of over 88 varieties of canned and frozen foods, Wattie's employ some 1,200 staff in the two factories at Hastings and Gisborne, and provide a consequential livelihood for over 400 growers and suppliers who, with their employees, bring the total employment-complex of the Canneries to not less than 2,000 workers.

The Company as growers

By far the largest Canners in New Zealand, the Company is also a major grower of fruits and vegetables on its own farms; Wattie's was the first Company to introduce mobile Pea Viners into New Zealand. Today, the Company operates the largest fleet of mobile harvesters and viners and the most up-to-date corn harvesters in the world. Mechanisation in both field and factory, province-wide contractual cropping, developmental research and field service, and regular cultivation of markets abroad, have made the Company the largest exporters of canned peas in the world.

Technological superiority

Under arrangements with one of America's largest manufacturers of food processing machinery, three skilled canning engineers come to Wattie Canneries each fruit season. As the seasons in this country are opposite to those in America, the arrangement works very satisfactorily and Watties have the advantage of the services of men thoroughly experienced in the maintenance of latest canning machinery. The American firm in question has on two occasions sent partly perfected machines with designers to be further improved here. This gives them the benefit of two fruit seasons in each year — one in California and the other in Hawke's Bay. The perfecting of these prototypes in Wattie's factories, keeps them abreast with latest American developments in labour-saving devices.

Cost reduction techniques of this kind enable the Company to sell abroad against world competition.

First to can asparagus in this country and today the largest producers of this canned delicacy in New Zealand, Wattie's have almost 750 acres of asparagus beds in production. A total of 1,500 acres has been planted and complete satisfaction of the local market is in sight with increasing volume for the demanding market overseas.

Wattie's orchardists, operating in the most favoured peach-growing areas in New Zealand, cultivate more than 40,000 trees of Golden Queen peaches, notable the world over for their size and canning flavour. Again, the latest American machines halve, pit and slice peaches and peel and core pears, by hygienic methods of mass-processing without superior anywhere in the world.

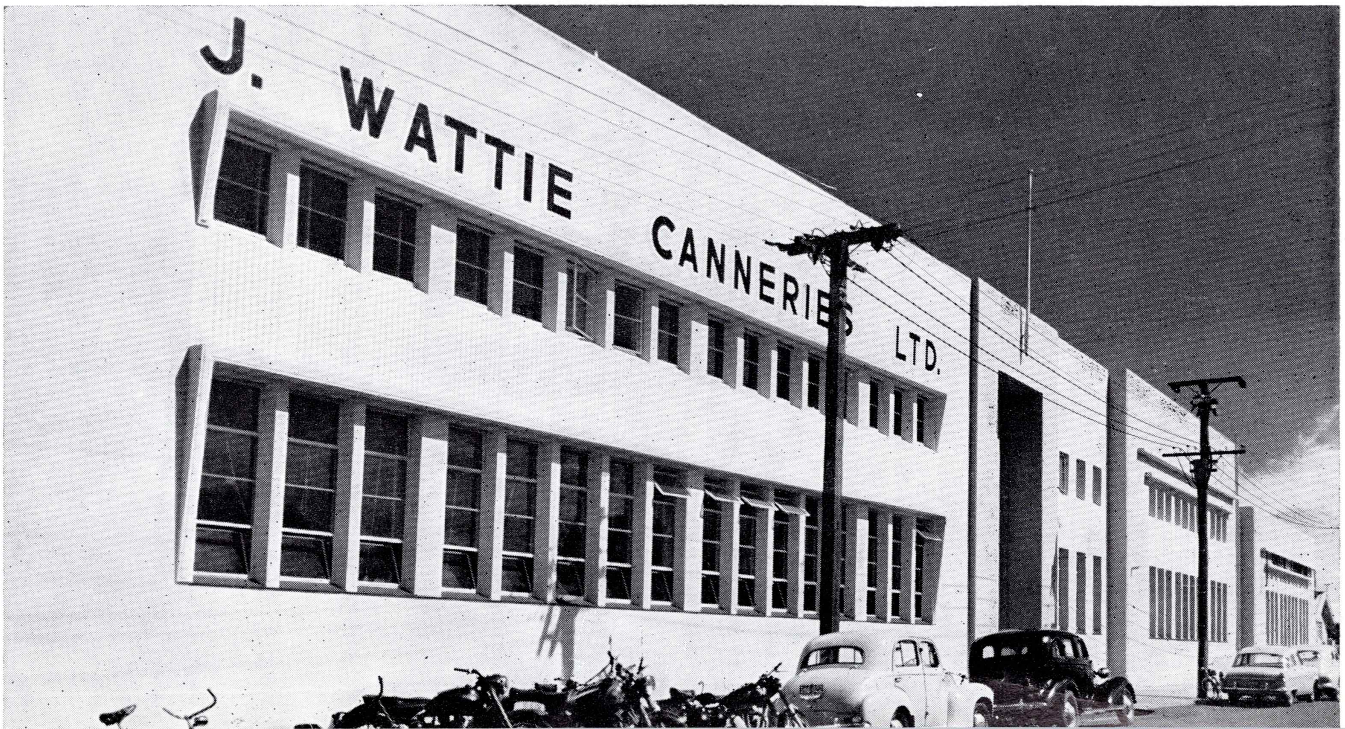
Size and strength strategically sited

Not the least advantage of operating in the "Fruit Bowl and Vegetable Basket of New Zealand" is that all crops are within 15 miles of the factories, thus facilitating the briefest time-span between harvesting and processing. Most vegetable crops are grown within 10 miles of the plant, so that garden peas, for example, are canned or quick-frozen within 90 minutes of harvesting.

Nowhere in the world is more rapid crop-processing possible. The result is true garden-fresh standards of quality, in a position to compete anywhere in the world.

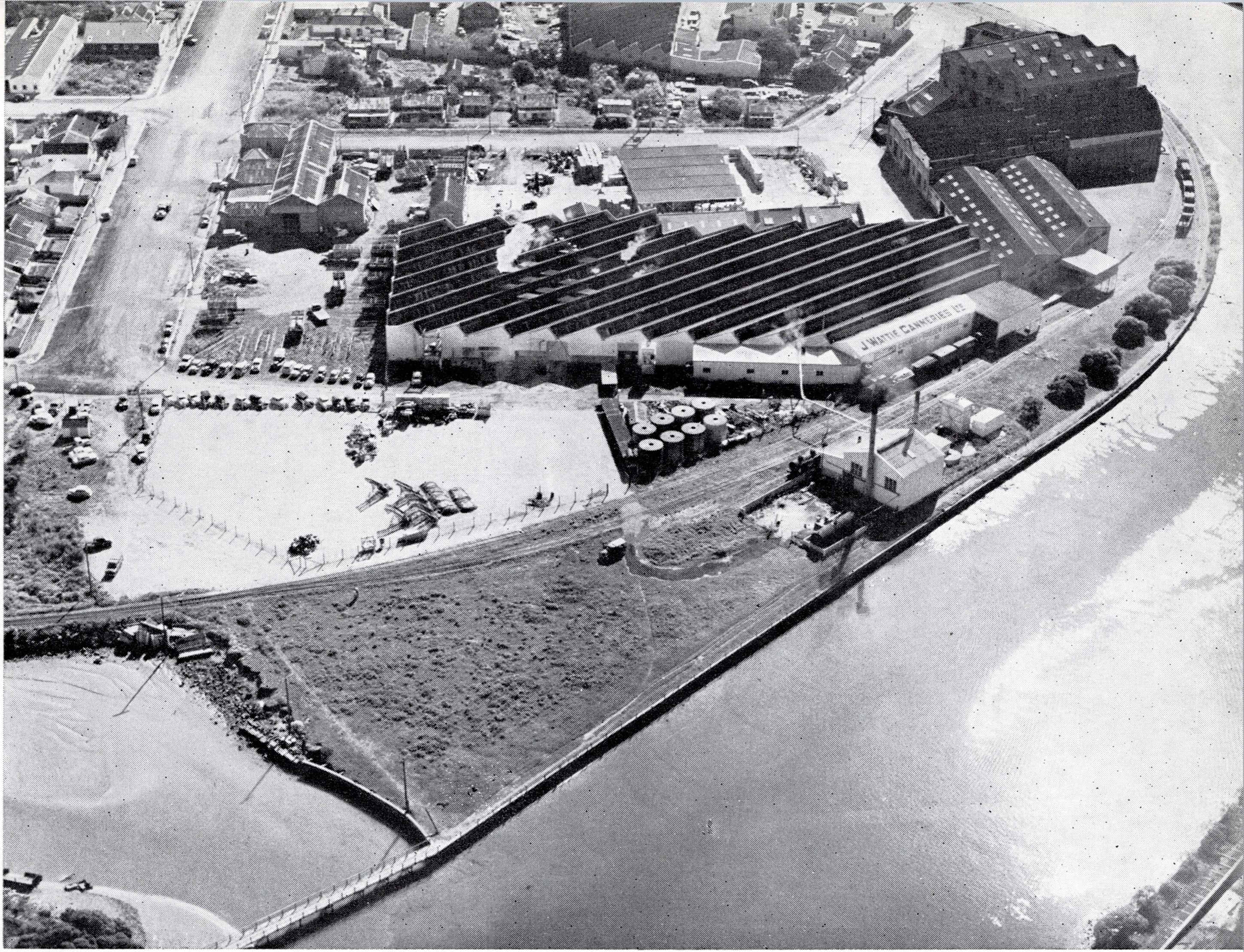
The small beginnings

The growth of this Company is one of the notable suc-



FACTORY AND OFFICES, HASTINGS, now cover more than eight acres of land. The factory, much of it doubled-storeyed, is extended every year to accommodate the ever-increasing through-put of processed foods.

Photo: Russell Orr.



cess stories of New Zealand industry. Founded in 1935 with a capital of £1,250 subscribed by 28 members, the Company was initially confined to pulping fruit for jam makers. The right types of fruit for canning were not then grown in the district in commercial quantities. The nation was only just coming out of the 'Great Depression' and few held high hopes for an entirely new industry which had to be built from the ground-roots upwards.

In that first season, there were only 25 on the payroll, but in its second year the Company had no difficulty in increasing its capital to £10,000; paid-up capital today is £1,000,000.

Today's output is in excess of 40 million units: canned and quick-frozen fruits, vegetables, fish, meats, pies, sauces, pickles, juices and soups, ranging in size from 5oz packs to 5lb. catering packs and gallon cans. The Company operates the most modern can-making plant in New Zealand, with two high-speed lines each producing 300 cans per minute.

Building an industry

Wattie's contribution to the growth and importance of New Zealand's canning industry may be gauged from the fact that, prior to World War II, 80 per cent. of New Zealand's canned food requirements were imported. Today, Wattie's production has made the nation self-sufficient in many fruits and most vegetables, with a volume production which increasingly serves the country's export trade.

THE GISBORNE FACTORY covers upwards of six and a-half acres and is situated with easy access to rail and port.

Photo: Lloyd Cornish.

During the War, the Dominion's ability to supply most of the canned foodstuffs for the Allied Forces in the Pacific theatres stemmed from the cropping industry based upon the Hawke's Bay Province. Wattie's Hastings factory was the first in the country to install machinery for the dehydration of foods for the Armed Forces.

For the Antarctic Expedition under Sir Edmund Hillary, Wattie's foods were selected and carried to the South Pole under conditions unique in the history of exploration.

In scientific research into soil and crop improvement, the Company maintains Field Supervisors and Laboratory Chemists always at the service of growers. New seed, improved varieties of plant and tree, new chemical sprays for weed and pest control, soil analysis and irrigation methods are all treated systematically in the Company's search for industry advance. Horticultural practice in the Company's operations has earned the commendation of world authorities.

On all counts, J. Wattie Canneries Ltd. is to be congratulated for an outstanding first quarter-century.

Manufacturers of Sponge Mix, Baking Powder, Custard Powder, Cornflour and Jelly Crystals

T. J. EDMONDS LTD 375 Ferry Road, Christchurch

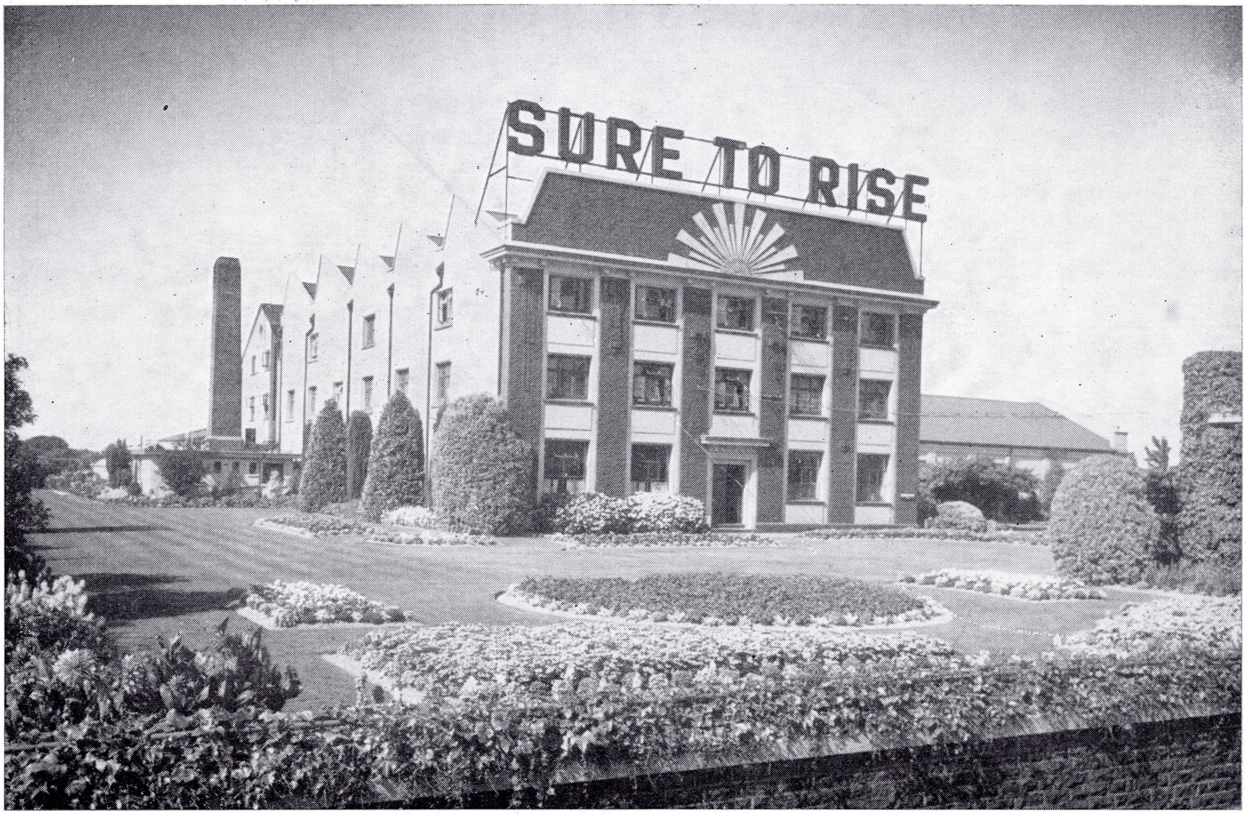
Established Christchurch 1879

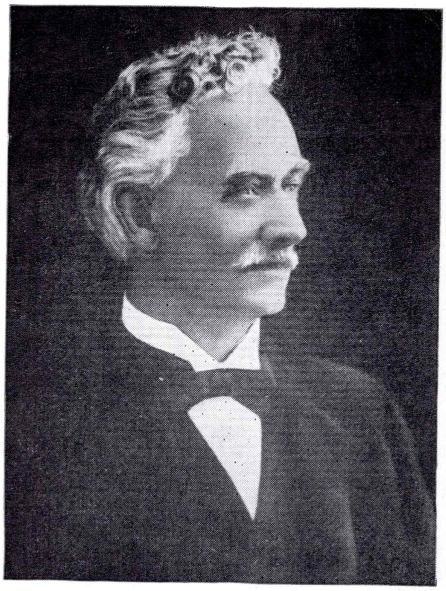
A. L. CROPP, 1914-1949, Managing Director.

F. S. TAYLOR, Present Managing Director.

K. W. EDMONDS, Present Director and Manager at Auckland.

THE EDMONDS FACTORY, CHRISTCHURCH. The garden surrounds, typical of the City of Christchurch, give the setting a park-like atmosphere.





T. J. EDMONDS, 1879-1932, Founder.

T. W. EDMONDS, 1894-1914,
General Manager.

The success story of T. J. Edmonds blends well with the history of New Zealand. It typifies both the growth of a robust young country, and faith in its economic future.

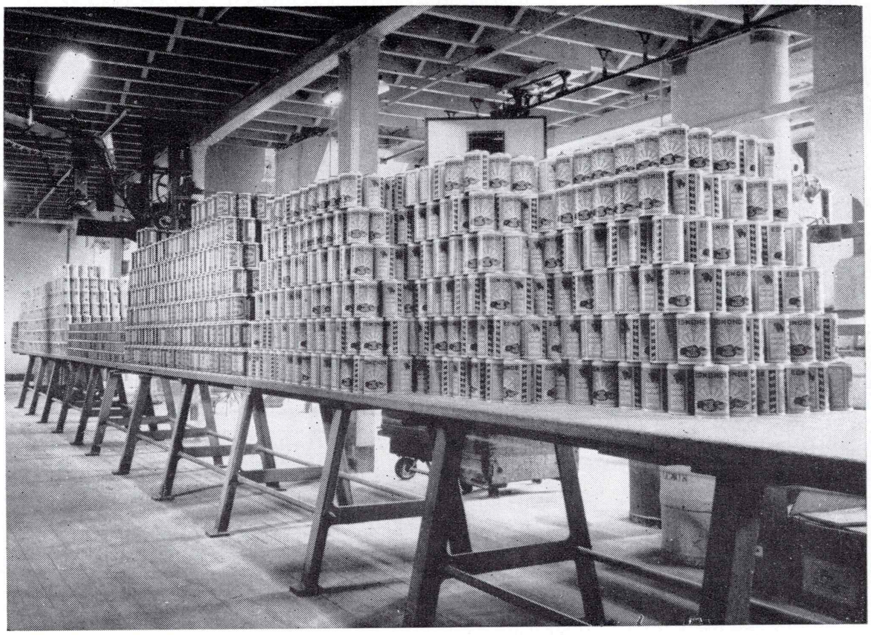
The arrival of a young man aboard the ship "Waitangi" at Port Lyttelton on 26th September, 1879 introduced to New Zealand a personality whose vision was to help lay the foundation stone of the prosperity of this country.

The young man, T. J. Edmonds, was in his 20th year and had been in the employ of Messrs Allen & Sons, one of the largest confectionery firms in London. This background was later to stand him in good stead.

Soon after his arrival in Christchurch, Mr. Edmonds opened up his own modest grocery store. It was not long before he noticed that none of the various brands of Baking Powder he sold seemed to satisfy the housewife. There was obviously a market for a better product. And so, with typical drive, he set out to produce it himself. It was here that he was able to use the experience he had gained with Allen & Sons, in London. After a good deal of mixing and testing, he produced his first batch of about 200 tins. At first, he only sold these to his own regular customers, but inevitably the reputation of the quality of "Edmonds Baking Powder" reached further afield, and soon demand was increasing from all quarters.

A Bold Decision

The time had come for T. J. Edmonds to choose between his grocery business or the full time production of baking powder. It is a tribute to his courage and foresight that he decided to concentrate on the manufacture of his own baking powder. By acting as his own travelling salesman in the early years, he soon built up a solid business, and, by 1911, 878,268 tins of Edmonds "Sure to Rise" Baking Powder had been produced. T. J. Edmonds realised the value of advertising and used it wisely and with dramatic effect. Demand increased year by year and the 2,500,000 mark was reached in 1929. Naturally, the original back room had grown to a three-storeyed modern factory on the site in Ferry Road selected by Mr. Edmonds.



PART OF ONE DAY'S PRODUCTION ready for packing.

Sure To Rise

The famous Edmonds trade mark "Sure to Rise" was a happy and appropriate slogan, and today it enjoys pride of place high up for all to see on the modern home of Edmonds. The factory, surrounded by magnificent gardens, is known and admired overseas, as well as throughout New Zealand. It is designed on the most modern lines, incorporating the latest in manufacturing methods and machinery. True to the wishes of the founder, the welfare of the employees is of first importance, and consequently they enjoy working conditions which are second to none in the Dominion.

Generosity

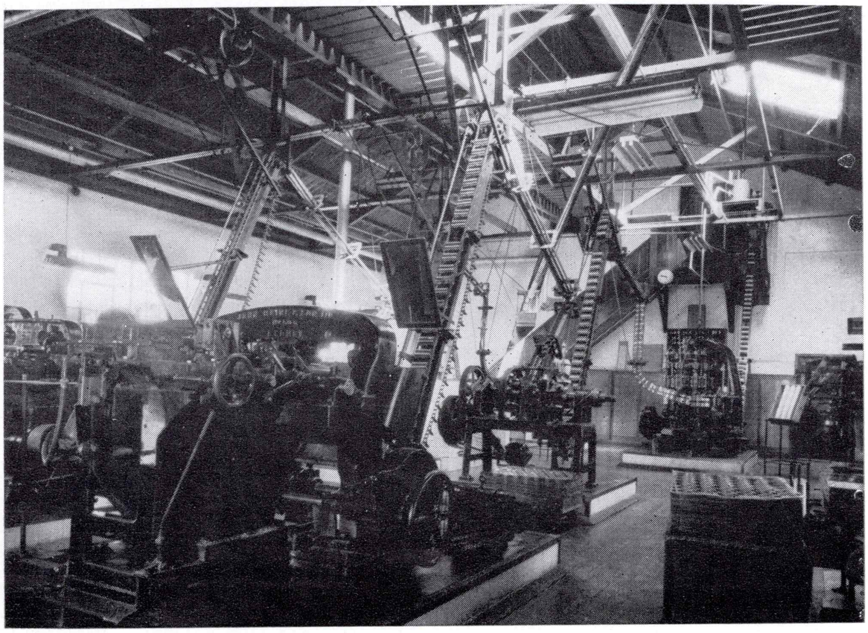
The late T. J. Edmonds continued to take an active part in the business until his death in 1932, but his interests extended well beyond his business. The same generosity which his staff experienced, Mr. Edmonds showed to the community in which he lived. The most permanent reminders of his philanthropy are the handsome Band Rotunda and the Clock Tower, both of which are situated on the banks of the River Avon in Christchurch.

Products :

Edmonds Sponge Mix.
Edmonds Baking Powder.
Edmonds "Acto" Baking Powder.
Edmonds "Acto" Cake Powder.
Edmonds Custard Powder.
Edmonds Jelly Crystals.
Edmonds "Maize Cornflour."
Edmonds "Wheat Cornflour."

The products listed here are already well known, but it is interesting to note that the Can Making Department of the

THE DEPARTMENT OF THE FACTORY where Edmonds baking powder tins are manufactured.



factory has such a large output that cans may reasonably be added to the list of factory products.

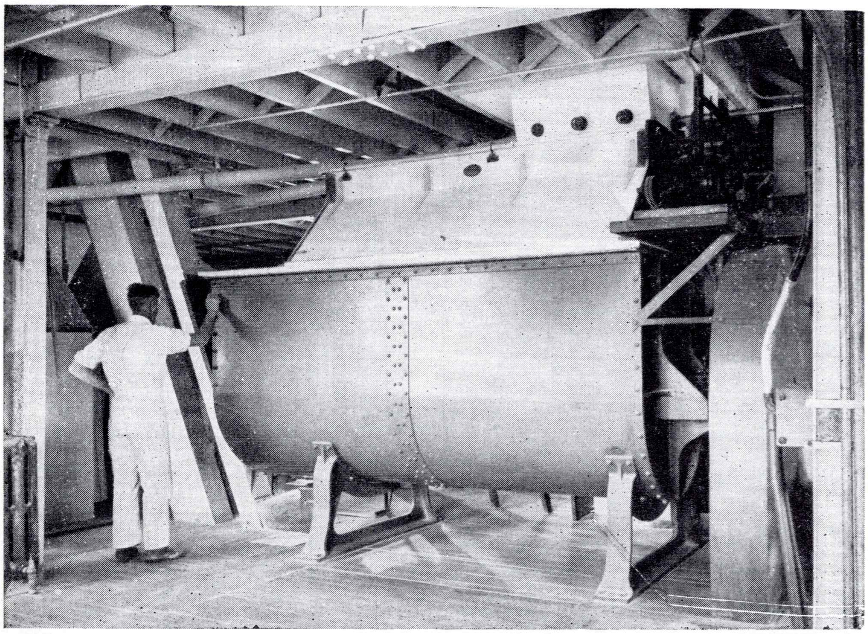
The Company buys tinplate by the ton, and huge automatic presses turn out 110 cans per minute. It can be imagined that the demand for cans to pack all Edmonds lines is enormous!

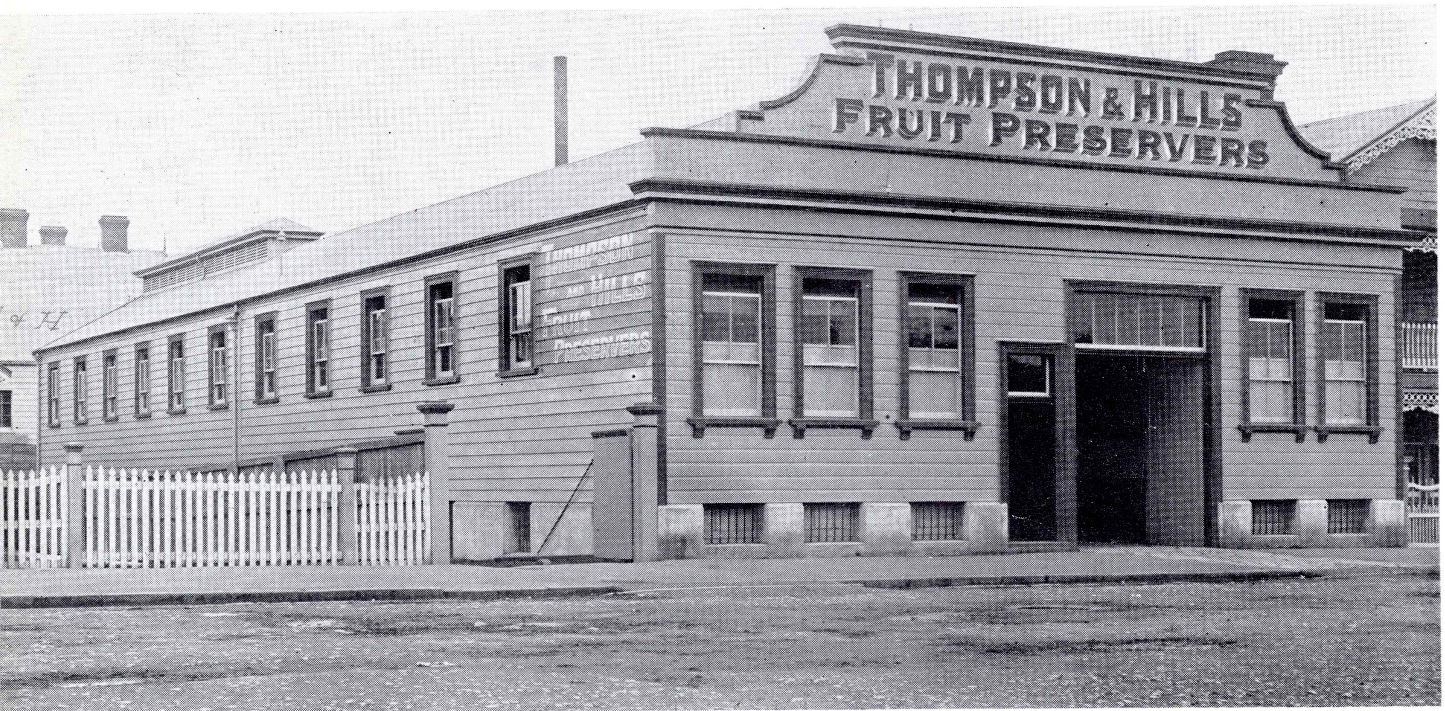
BAND ROTUNDA on the banks of the River Avon, presented to the citizens of Christchurch by Mr. T. J. Edmonds.

Conclusion

The Edmonds story is a story of determination, high principles and exacting standards of manufacture. It is one of the finest advertisements of the manufacturing potential of this vigorous young Dominion. The Edmonds executives today are men who have the same initiative, drive and foresight as the founder. Under their guidance, Edmonds will continue to progress in the years that lie ahead.

A MIXER for one of the principal Edmonds products, Baking Powder.





"Picked in dewy freshness —
cooked with nourishment all

THOMPSON & HILLS

Above: THE ORIGINAL Nelson Street Factory, 1900.

For more than three generations the firm of Thompson & Hills Ltd. has provided the people of New Zealand with the natural goodness of fresh food at the turn of the can-opener.

The original business was a partnership founded in 1897 by Mr. R. S. Thompson and Mr. F. M. Hills, both of whom had had some previous experience in fruit growing and preserving, and they commenced their new industry in small, rented premises at Freeman's Bay, Auckland. A few years later, they built a small, single-storey factory on the present site and, since then, extensive additions from time to time have resulted in a factory with floor space covering over three and a half acres and three storeys, fronting on both Victoria and Nelson Streets in Auckland, and the establishment of branch factories within the "fruit bowls" of New Zealand, at Napier and Motueka.

In 1911, the firm of Thompson & Hills was incorporated into the existing limited liability company, and, in 1927, the Company merged its interests with the Australian company, Henry Jones Co-operative Ltd.

In conjunction with its associated New Zealand Company, S. Kirkpatrick & Co. Ltd., whose factory is at Nelson, the Company also owns and operates the Dunedin Canning Co. Ltd., thus ensuring to both companies a constant supply of fresh Otago apricots for jam-making and canning, since no satisfactory source of supply is available nearer to Auckland.

The Nelson factory was manufacturing jam in 1881, having been established by Mr. S. Kirkpatrick, and, in 1899, this firm was incorporated as a limited liability company, S. Kirkpatrick & Co. Ltd.

Thus the group has factories strategically placed for operating efficiently throughout New Zealand.

Overseas Connections

Thompson & Hills Ltd. and S. Kirkpatrick & Co. Ltd. are both members of Henry Jones Co-operative Ltd., of Melbourne, whose extensive range of operations embraces factories, orchards, mills, and other activities throughout Australia, and in South Africa, New Zealand, England and elsewhere. Thus they are always in touch with new developments in technique and plant in other countries.

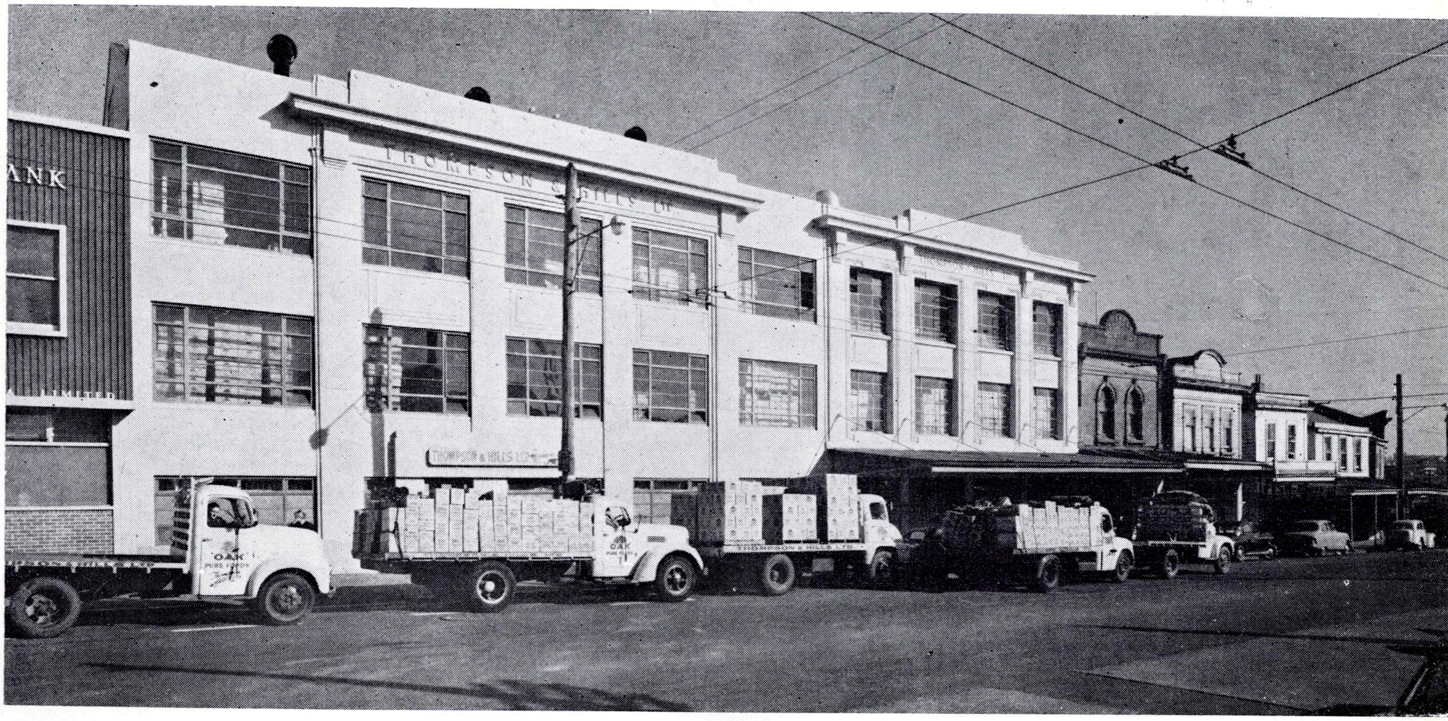
"Oak" — the sign of good food

The Company set out to produce foods of the highest possible standard of quality and flavour and this policy has been consistently followed for over 60 years.

Only the finest produce of our fertile land is used in the wide range of the Company's products; strict specifications in the contracts with growers ensure that only crops of the correct maturity and in perfect condition are accepted for processing.

It is not generally realised by the average housewife who opens a tin of luscious, golden peaches, or fresh, green peas, in the middle of winter — and there are few who do not take them for granted nowadays — that her family's wants had necessarily to be anticipated about a year beforehand, and a long and complicated chain of planning, calculating, ordering, growing, manufacturing, processing, checking, testing, labelling, storing and distributing to warehouses and shops had to be accurately carried out to enable them to enjoy "out of season" gastronomic pleasure.

The secret of successful canning lies in the careful planning and organisation necessary to co-ordinate with split-second accuracy the timing of the hundreds of operations involved. A moment's reflection will show the truth of this statement when it is known that the can-making machines each turn out approximately three cans every second of the working day, and these have to be distributed to the various machines in different parts of the factory which fill them with the pro-



packed when flavour is at its peak — pealed in . . .”

LIMITED Auckland and Napier

Above: FACADE OF THE PRESENT AUCKLAND FACTORY, which encompasses the area bounded by Victoria Street on the one side and Nelson Street, for about 200 yards, on the other.

ducts concerned, and when filled they must again be moved to machines which put on the lids, and then they must be moved again to be sterilised and otherwise dealt with.

The products to be filled into the cans and bottles have all to be prepared in various ways before going to the filling machines. Thus, it can be seen that the slightest inaccuracy in timing at any point can cause confusion.

Factory Operations

Fruit and vegetables on arrival at the Receiving Department are inspected, weighed, recorded and distributed to the respective departments for processing; there are numerous departments each requiring a wide variety of plant and machinery to cope with the different products, which include canned Asparagus, Green Peas, Green Beans, Sweet Corn, Baked Beans in sauce, Spaghetti with sauce, Baked Beans and Sausages, Canned Fruits, Canned Soups of various kinds, Tomato Sauce, Worcester Sauce, Jams, Marmalade, and Lemon Cheese, to cite but a few of this Company's "46 varieties of quality fare."

Preparation of Fruit and Vegetables

A first essential in canning and jam-making is the preparation of the raw material. Peaches are cut in half, stoned and sliced; apricots cut in two and stoned; quinces quartered, cored and diced; citron melons peeled, cut in half, diced and seeds eliminated; oranges quartered, peeled, the peel sliced and the rest shredded. All these operations are carried out by different ingenious machines.

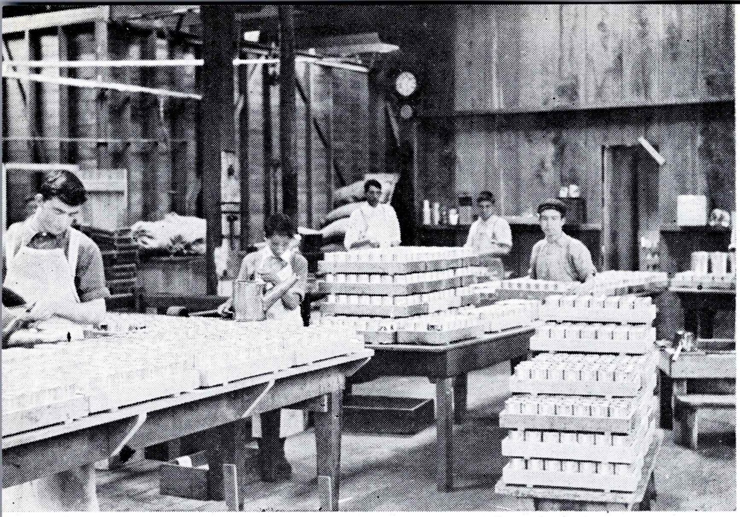
William Bon Chretien pears are the first of the season's canning fruits to be ready for processing. Immediately after harvesting, pears are usually put into cool storage in order to allow them to ripen up evenly. They are drawn ex-store from day to day, according to the capacity of the canning plant to deal with them, and allowed to stand until they reach normal temperature and condition. The pears are then fed into machines which peel, halve and core the fruit.

Golden Queen peaches are the principal variety used for canning. The fruit is graded and halved or sliced. The fruit to be canned "whole" has the outside skin removed by passing it through a hot solution, subjected to friction as it travels through a revolving cylinder, and washed by powerful jets of cold water. In the case of peaches intended to be packed as halves or slices, they are fed into automatic machines which cut each fruit in half and eject the stones. Slices are produced by "halves" being placed on a travelling belt which carries them under a set of vertical revolving discs set at suitable angles for cutting the half-round fruit into equal slices.

Tomatoes for use in soup or sauce making are delivered in crates and carried by an endless conveyor to an elevated washing machine. The washing machine consists mainly of a perforated cylinder about 12 feet long and three feet in circumference, fitted internally with water jets, the whole rotating in a tank of water. After being subjected to the washing process, the tomatoes drop into a "crusher," which crushes and tears the fruit to pieces. The crushed tomato falls into a stainless steel tank, from which it is pumped to the third floor above, and is discharged into one of a battery of 400-gallon stainless steel vats.

When sweet corn reaches the right stage of maturity, the cobs are picked mechanically. At the factory the cobs are passed through "huskers," which strip off the husk; another machine cuts off the corn from the cobs; a "silker" eliminates the "silk" and any foreign matter.

Green beans first pass through a "top and tailer," then



HAND-FILLING of Jam tins, 1900.

through mechanical "slicers," which cut the beans into strips ready for filling into cans.

Green peas are sown at different times, allowing for harvesting over a period of about six weeks, during which the various sowings mature. The factory is thus given time to deal with the huge crops, by far the greatest in the canning industry.

At the right time, vines are cut down by mowing machines, gathered by lorries fitted with "self loaders," and driven to the factory to be fed into huge vining machines. Within this machine the vines are subjected to beaters which burst the pods, pass the peas through perforated walls, and eject the vines at the end of the machine. The podded peas are emptied into the hopper of a bucket elevator and carried to the "flotation washer." Here the peas are washed, leaves and broken pods, etc., floated off, and the heavier material is trapped.

Following on this process the peas are discharged into a "blancher," consisting of a perforated cylinder twelve feet long revolving in a tank of hot water and enclosed in a steel cover. Steam at a high temperature is injected while the peas travel through the cylinder to the other end. A cold water washing process follows and they are discharged on to a white travelling belt along which are stationed workers who pick out any discoloured or over-matured peas, and the rest are dropped into a hopper of another bucket elevator, which carries the peas to the filling machines.

In every instance as enumerated, the operations are carried out by ingenious electrically-driven machines.

Processing

All cooking throughout the Auckland and Napier factories is done under high pressure steam produced by large multi-tubular boilers. Each process differs, but space allows only for concentration on one of these processes — jam making. This department is situated in a huge room containing a long battery of steaming copper jacketed pans — each capable of holding 50 gallons or more — filling machines, jam coolers, can closers, a large hydraulic press, elevators, etc.

The prepared fruit is brought into the jam boiling room in wheeled containers, from which sufficient fruit is weighed out to make a "boil" of some 150 lbs. of jam. The correct quantity of white pure 1A sugar is weighed out from a slide in the bottom of a hopper, which is suspended from the ceiling and holds about six tons of sugar. From time to time, it is replenished from the contents of 140 lb. sacks stacked on the floor above, passing through sieves on the way.

The fruit and sugar are tipped into one of the copper, steam jacketed pans with a little water, and stirred. Steam is turned on and this circulates round the outside of the copper pan, but inside the iron jacket. The steam, under pressure of 60 lb. per square inch, produces a temperature of 300°F. The mixture is brought to a boil as quickly as possible and, on reaching a certain temperature, the "drip" test is made and checked by a refractometer reading. On reaching the right consistency, a lever is pulled tilting the pan, and the jam is poured into a wheeled copper container and allowed to cool before being elevated into the hopper of a filling machine. Empty cans are placed on a conveyor and carried into the filler. This machine measures off the correct quantity and weight and discharges the jam into each can as it passes.

From the fillers, the cans pass into the lid seaming machines. They place a lid on each can, bend the edges over the flanges of the cans and pass the cans in under the seaming head, where two grooved rollers revolve around the lid to seam it on, making an airtight seal.

The sealed cans now roll into washing machines where they are scrubbed in order to remove jam which might have spilt over the outsides. Then, in an upright position, the cans are conveyed into a "cooler" in which they are subjected to sprays of cold water and a draught of air as they slowly travel through. This cooling process is to prevent the jam being "over-cooked" by its own heat and to cool the cans sufficiently for labelling and casing.

From the "cooler," the cans roll on to an elevator, which discharges them in runways in another section of the room. The runways cross a yard and re-enter the factory in another part, where the cans are delivered into a labelling machine and labelled just as quickly as they can pass through. The labelled cans are cased up as they come along and trucked to the adjoining warehouse.

The "Can Shop"

Can making is complementary to the entire process. Here, tin plate — thin sheets of mild steel thinly coated with tin imported from Wales in light steel containers holding 1,120 sheets and weighing approximately one ton — is cut into blanks of correct size for can bodies and strips suitable for "ends" or "tops and bottoms." Automatic die stamping presses produce 200 ends per minute.

"Lining machines" pour a rubber solution into a channel around the edge of the ends which, after passing through drying ovens, leave thin bands of rubber, which help to produce airtight seals when sealed on the can bodies. The "Body Maker," "Flanger" and "Seamer" machines produce a steady flow of completed cans at a speed of about 150 per minute.

Dominion-wide and Overseas Markets

From the busy Despatch Department orders of "Oak" products are assembled, loaded on to the Company's motor trucks, transported to local warehouses, railway goods sheds and wharves for despatch to coastal and overseas destinations.

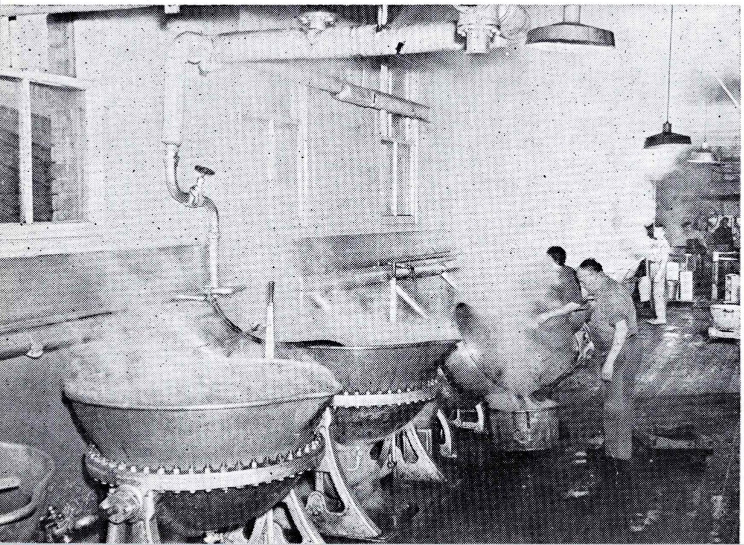
Employment

The New Zealand factories keep approximately 600 employees regularly at work and many more find casual employment in the busy season. In addition to these, many farmers and orchardists are kept busy producing the thousands of tons of fruit and vegetables processed each year.

Board of Directors

The present Board of Directors of Thompson & Hills Ltd. comprises: Mr. A. W. Palfreyman (Chairman), Mr. F. H. Peacock, Mr. Thos. R. Boyce, Mr. R. Duthie; and four Executive Directors in New Zealand: Mr. Ray S. Thompson (Managing Director), Mr. Noel Simmonds (Sales Director), Mr. H. E. Roberts, Mr. S. M. Thompson (Napier Branch Manager). Mr. A. Peterson is the Company's Secretary.

A SMALL SECTION of the present Jam Boiling Department.



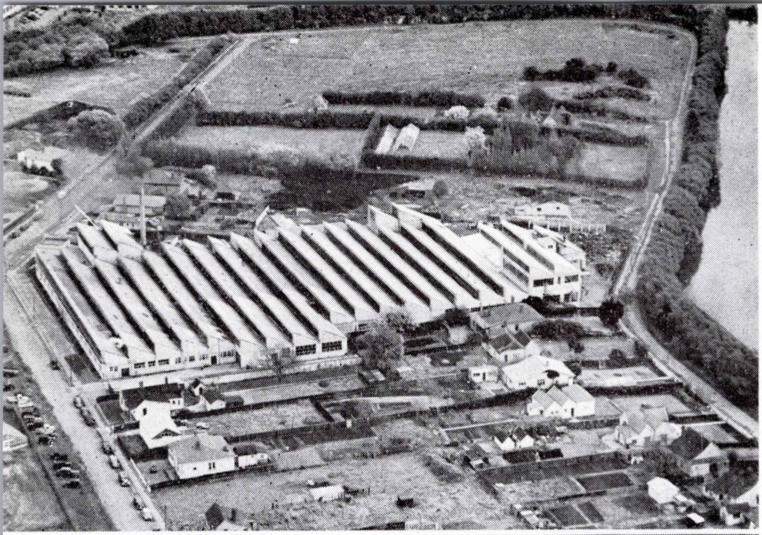
PART C

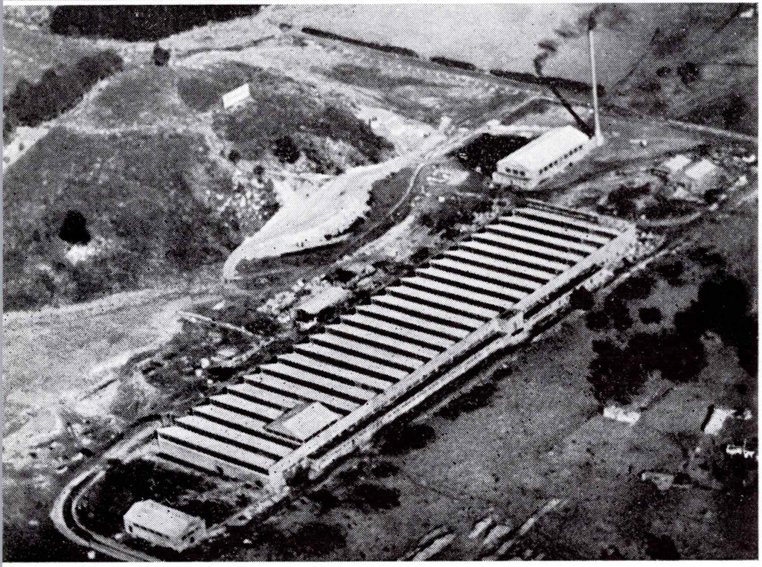
Rubber, Glass,

Plastics, Paints,

Chemicals, Ceramics,

etc.





DUNLOP NEW ZEALAND LIMITED

Head Office: - - - 35 Marion Street, Wellington

FACTORIES (Illustrated left): WOOLSTON (top) and UPPER HUTT

Branches: - - - - - - - - Auckland
Hamilton
New Plymouth
Hastings
Wanganui
Palmerston North
Wellington
Christchurch
Timaru
Dunedin
Invercargill

Good news travels fast. Only ten years after John Boyd Dunlop had invented the first practicable pneumatic tyre, it was being sold on the other side of the world.

One of the first rubber companies to recognise the importance of the New Zealand market was the Australian Dunlop Company, and in 1897 one of their executives, Mr. C. A. Proctor, visited New Zealand. Early in 1898, he opened an office in Christchurch. Mr. Philip Proctor, the present Managing-Director, is a son of Mr. C. A. Proctor.

In those days, the principal market was in cycle tyres, and the greatest demand was centred in Christchurch. As time went on, the motor vehicle became increasingly popular, and in 1902 the Head Office was transferred to Wellington. By 1914, branches had been opened at Auckland and Dunedin, and a flourishing business had been founded in general rubber lines.

In 1929, the Australian Dunlop Company transferred its interest in the New Zealand market to Dunlop Rubber Co. (New Zealand) Limited. The following year, this new Dunlop organisation entered into an arrangement for the distribution of Dunlop products by the New Zealand Loan and Mercantile Agency Co. Ltd.

Shortly afterwards, growing interest was shown by the Government and others in the establishment of a local tyre industry, but the outbreak of World War II led to an indefinite postponement of the manufacturing scheme, although, in 1939, the Australian Dunlop Company had established at Woolston, Christchurch, a small general rubber goods factory, which was later purchased by the New Zealand Company.

For Upper Hutt, a Tyre Factory

In 1945, Dunlop's huge and far-reaching war jobs completed, plans were again prepared for manufacture in New Zealand. The Company renewed its application for a license for the manufacture of car and truck tyres and, when the license was granted, a building scheme was drawn up for a complete new factory at Upper Hutt, 20 miles from Wellington. This plant was planned to produce about 180,000 car and truck tyres a year; and the enlargement of the Woolston factory was designed to expand production of existing lines and to add the production of a number of new products.

In July, 1946, a company, Dunlop New Zealand Limited, was registered in New Zealand with local capital to finance the building of the factory and to take over the Woolston factory and the existing Dunlop selling company, with an issued capital of £NZ1,250,000—500,000 preference shares and 750,000 ordinary shares. All the preference and 40 per cent. of the ordinary shares were issued to the New Zealand public and the actual issue was heavily oversubscribed.

Clearing operations at the Upper Hutt factory site began in September, 1946.

Finding the Ideal Site

When Dunlop decided to make tyres in New Zealand, the plans included a factory as modern as experience and science could make it. Finding a suitable site in the Wellington area, large enough to allow for future expansion, proved no easy task. Choice eventually fell on a 40-acre plot at Upper Hutt, 20 miles from the city. The land has easy access to both rail and road, and, with the completion of the Rimutaka Tunnel and, in the years to come, the rail connection to Paekakariki, it will be an ideally central point for distribution.

The factory as a whole is an almost complete self-contained unit, with its own water supply, electric sub-station, and its own telephone exchange with direct lines to Wellington.

The main building, which is 780 ft. by 180 ft. and is one of the largest industrial buildings in New Zealand, has a floor area of over three acres under one roof. It is at single-storey level, with good natural lighting and adequate cross-ventilation.

The earthquake risk presented special problems in providing safe foundations for heavy machinery, and all mass concrete had to be reinforced with bar steel. The building itself is similarly reinforced.

The machinery incorporates the latest development of Dunlop tyre building, and individual presses controlled by push button for moulding tyres and tubes. Other special features include the cleanliness of enclosed elevators for raw materials and the automatic weighing of carbon black, used in compounding the rubber.

A Free Flow of Raw Materials

Quality of production is ensured by a central control laboratory in the works, in addition to physical and chemical laboratories attached to the office section. The layout is open to allow expansion of production without overcrowding. The overall layout of the factory provides for a flow of materials and raw ingredients to the finished product.

Power lines of 11,000 volts entering the site are stepped down by three transformers in the sub-station adjacent to the main building. An electricians' workshop is included.

Some distance from the main building is a large boiler house, with three Lancashire boilers each of 9,000 lbs. per hour capacity, and in the same building is housed the pump room for water and compressed air and hydraulic services, together with a fully-equipped machine shop capable of handling all maintenance work.

Services Go Underground

A special feature of the factory is that all services from the boiler house are taken underground along a large subway running the full length of the main building; branches lead off into the factory at appropriate points below floor level. This reduces heat losses, makes servicing easier and cheaper, and, of course, gives a clean and uncluttered appearance to the building.

Well away from the manufacturing building is the canteen, equipped to provide hot meals day and night for a factory staff of 500. It is also used for social events, such as dances, film evenings and other recreational activities; and, as in the case of all other buildings, is capable of expansion when required in the future. Beyond the buildings themselves are tennis courts, gardens and lawns, which complete this 42-acre, £1,000,000 project.

Woolston—The Factory that Grew Overnight

For rapid growth, few industries in New Zealand can compare with the Dunlop factory at Woolston, Christchurch. In a little over seven years, it grew from a small shop covering 11,570 sq. ft. and employing nine operators, to a large factory with a floor space of over 80,000 sq. ft., employing more than 200.

The establishment of the Woolston factory is an example of industry rising to meet an emergency. In 1940, there was an acute shortage of milking machine rubberware, and it was eventually decided to overcome this shortage by manufacturing in Christchurch. Under the sponsorship of Dunlop Rubber Australia Limited, therefore, the Barnet Glass Perdriau Rubber Company of New Zealand Limited was formed.

REMOVING a car tyre from a mould.

RUBBER BY THE SHEET: A workman cutting it off the open mill in Dunlop's Upper Hutt factory. Photo: P. H. Jauncey Studios.

In April, 1940, a start was made with the erection of buildings in Junction Street, Woolston, and, although they were not actually completed until April of the following year, production of milkerware began in January, 1941. By November of the same year, the payroll had doubled and production was in full swing on milkerware, with subsidiary lines such as rubber bands and gas tubing.

A Swing to New Lines

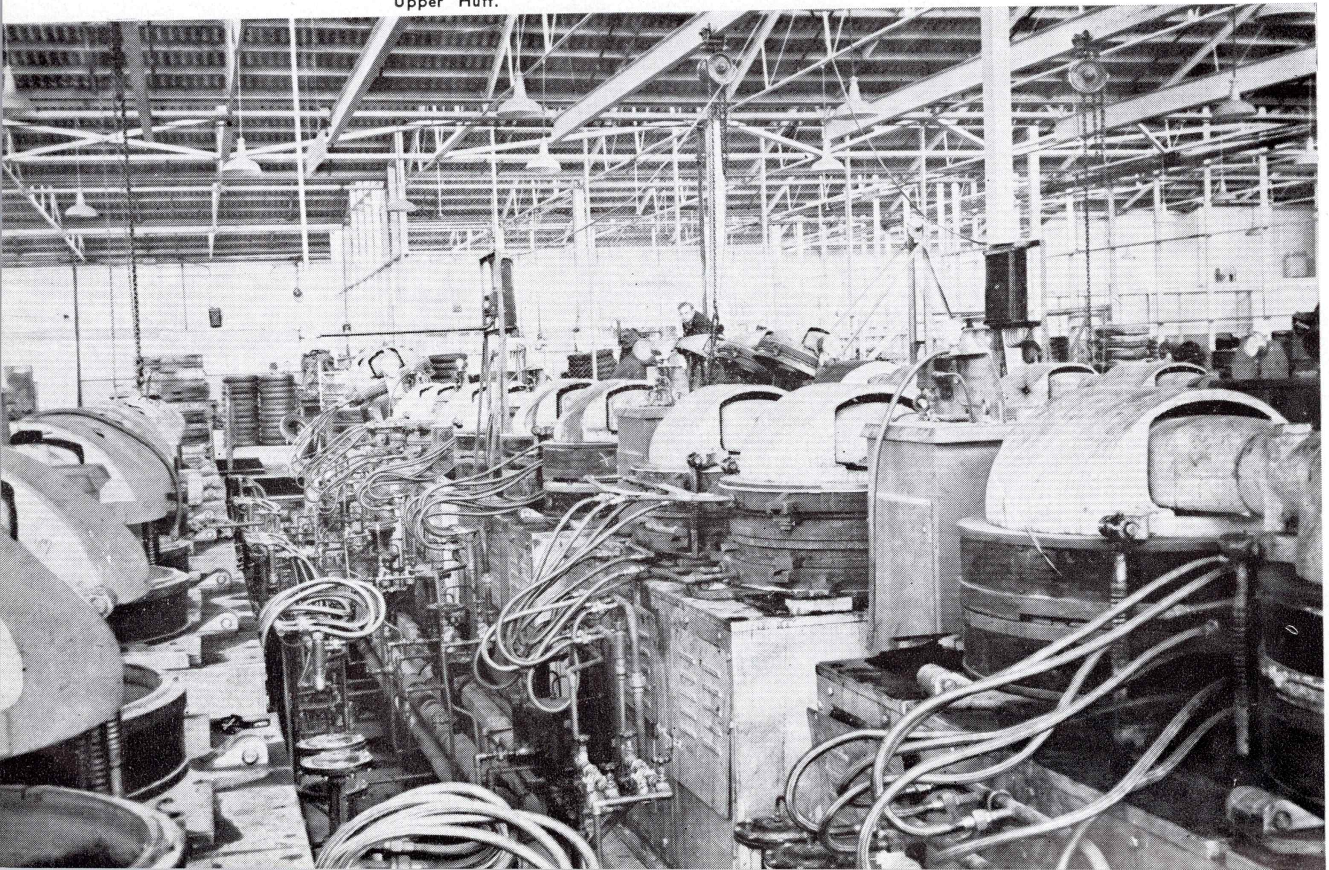
By the following year, work had started on a further four bays to the original building to house the projected manufacture of cycle tyres and tubes, battery boxes and soles and heels; and even before these additions were completed, plans were made for yet another two bays. The latter part of 1943 saw the start of production on soles and heels, battery boxes and parts, battery dough and cycle covers and tubes. Milkerware was still being produced, but it no longer held its previous position of importance on the production programme.

In 1946, Dunlop New Zealand Limited took over the assets and business of Barnet Glass Perdriau Rubber Co. of New Zealand Limited and incorporated the factory in its main project.

Today, the Woolston factory is also producing the world-famous Dunlopillo Latex foam, retread rubber, and repair material for motor and truck tyre retreads, hot water bottles, pram tyres and tyring, and sundry other moulded and extruded articles.

Woolston Factory has been designed on modern and progressive lines, and every effort has been made to make working conditions as pleasant as possible. Cafeteria and dining-room facilities are light and airy and an up-to-date kitchen from which hot meals are served is included. There is a well-equipped surgery, with men's and women's waiting rooms. The locker rooms are provided with showers, wash-tubs and a drying-room.

INTRICATE PIPE WORK OF A BATTERY of Car Tyre Vulcaniser Presses, Upper Hutt.



NEW ZEALAND LIMITED

Present Board of Directors

G. Philip Proctor, Managing Director.
R. H. R. Chalmers, C.M.G.
F. H. Bass.
H. C. Chapman, Sales Director.
A. Armishaw, Works Director.
G. E. Beharrell.
A. R. M. Geddes, O.B.E.
T. E. Peppercorn.
D. M. Young.
Secretary to the Board, N. K. Lea.

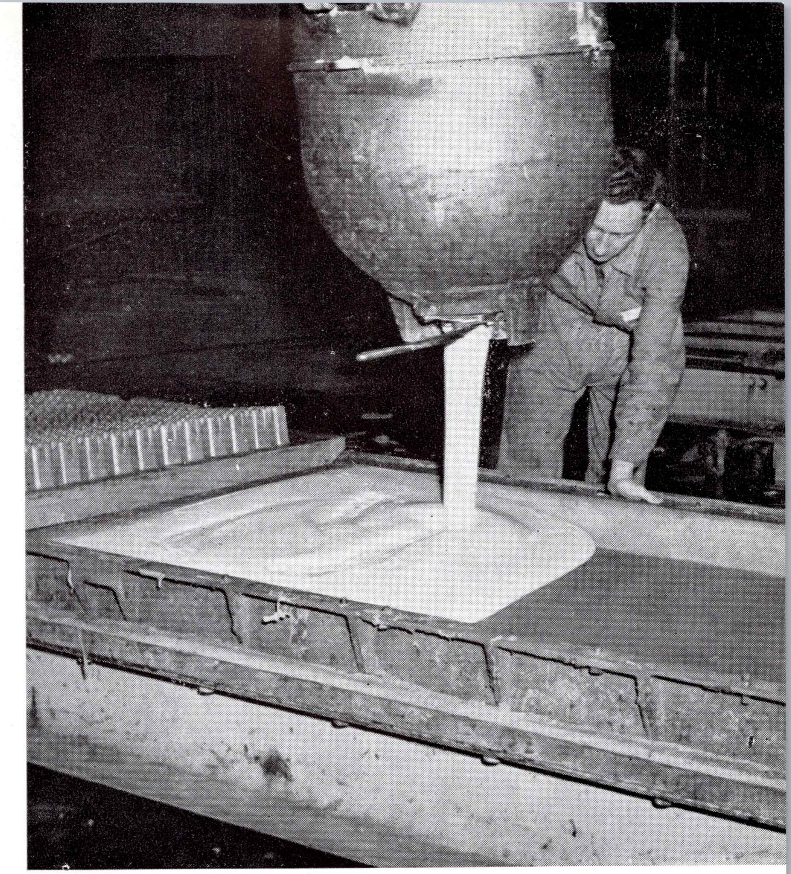
New Zealand Staff

Upper Hutt Factory, 420; Woolston Factory, 250; Sales, Distribution, Operating, etc., in branches and H.O., 165; total, 835.

Dunlop's Sixtieth Year

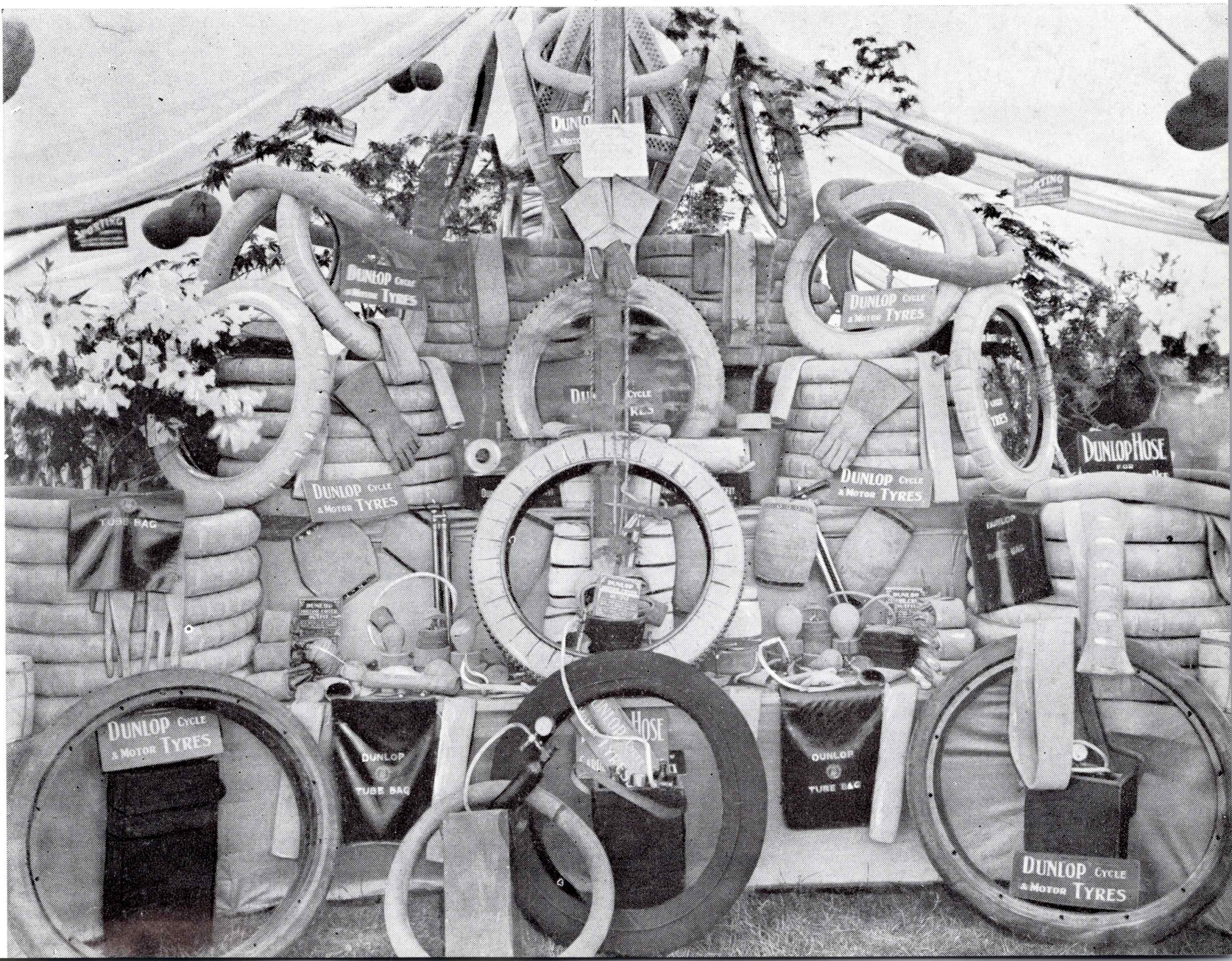
Since Dunlop started in New Zealand 60 years ago with one office in Christchurch, the business has grown until today, besides the two factories at Upper Hutt and Woolston, the Head Office in Wellington, there are eleven Dunlop Branches as well as eight Distributors in the smaller centres.

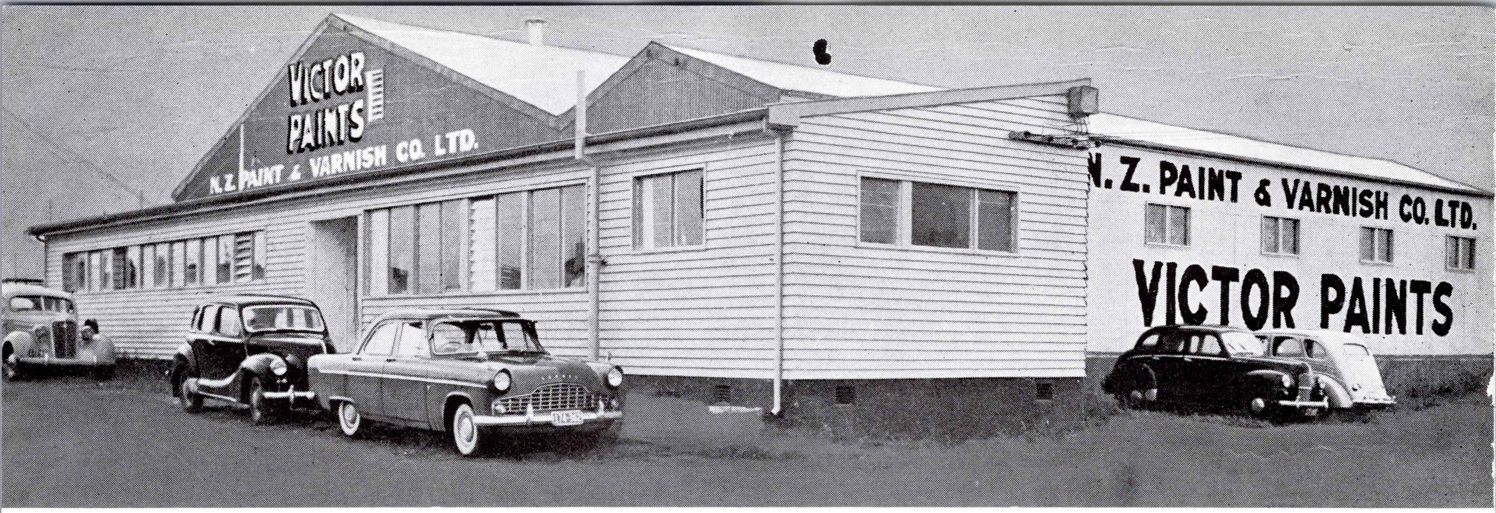
Dunlop Distributors are located in the following centres:— Whangarei, Gisborne, Wairoa, Napier, Masterton, Nelson, Blenheim, Greymouth.



MATTRESS MAKING AT WOOLSTON: The Latex mix is being poured from the frothing bowl into the mould.

RUBBER PRODUCTS OF 1914: The range of Dunlop products available 44 years ago — the firm's stand at the Christchurch Show.





Unlimited possibilities in the field of colour

N.Z. PAINT & VARNISH CO. LTD. Awatoto, Napier

This Company was founded in 1937. In a portion of a garage with "lock-up" sheds attached, situated in Shelley Street, Napier, and conveniently near the Fire Station, the manufacture of paint and varnish was undertaken. Some time later, the whole building was taken over as a result of the introduction of new lines and increased sales.

Steadily the original two-man business prospered until, in 1950, the Company embarked upon a campaign to cater for future expansion and development. Land was purchased at Awatoto, an area set aside for heavy industry.

By 1957, the change-over had been effected. The new factory, planned for efficient production, combined a raw materials store, mill room and finished goods store, all under a steel frame construction. Laboratories, offices and service departments completed the unit. A modern oil burning varnish plant and dangerous goods store were erected apart from the main building to minimize the fire hazard.

The Company maintains a very high standard of production, concentrating on accuracy to the finest detail. An experienced chemist, qualified in all aspects of the paint industry, controls this activity. Raw materials are subjected to stringent tests, as are all finished lines.

New processes are examined and analysed continuously and the firm is able to offer tested and proven materials to the general public, house-owners, builders, painters and industry alike.

The Company manufactures Primers — Totara, Red Lead, P.W.D. No. 2, zinc chromate and Lead Chrome, with "Victor" White Primer leading the field.

First Quality Z.T. and L.Z.T. undercoats are continuously in demand. Exterior finishing paints — first quality Z.T., L.Z. and L.Z.T. and High Gloss—are processed in a full range of colours, along with interior finishes—Porcelac Enamel, Kovacote Semi-Gloss and Kovacote Matt.

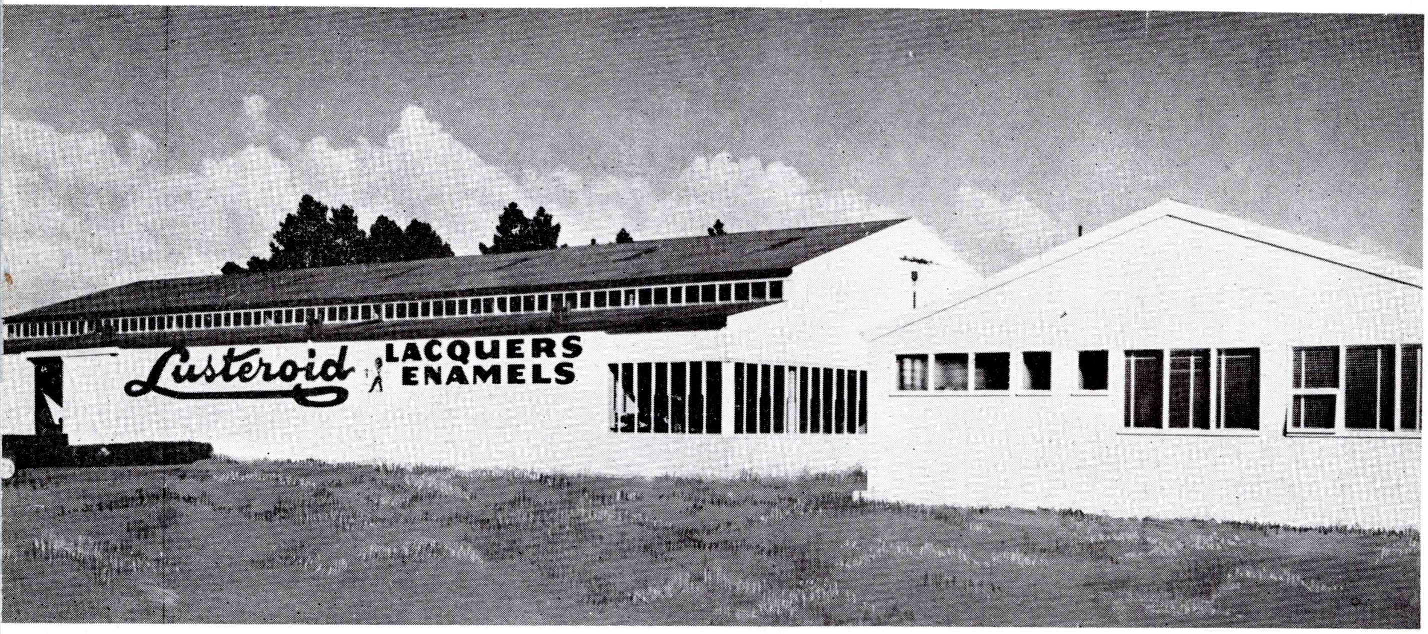
The Company is proud of its range of colours in Roof Paints, which are renowned for their durability. Their Cherry Red is well known.

Large quantities of a full range of flooring adhesives are made. These products have a national coverage and are known throughout the flooring trade.

Items such as Cold Galvanising, Polish, Anti-Fungus Oils and Varnishes complete the Company's products.

The organisation's technical and advisory services are always at the disposal of Government Departments, Architects and Local Authorities.

(Below): **THE FINISHED PRODUCT** in the dry goods store at N.Z. Paint & Varnish Co. Ltd.'s factory, and (right) a view of portion of the mill room. Photos: Russell Orr.



LUSTEROID PROPRIETARY (N.Z.) LIMITED

Monahan Road, Mt. Wellington, Auckland

It only requires a few moments of reflection to appreciate the importance of an attractive finish to an article, irrespective—almost—of what it is. In the business world, "eye appeal" is a first essential in sales presentation.

In the Surface Coating Industry, where it is necessary to keep fully abreast of modern developments, Lusteroid Pty. (N.Z.) Limited, strong in research and technique, is a leading manufacturer of Lacquers, Enamels and all surface coatings. Practically all products of industry require, as a final treatment, the application of a surface coating to provide protection for, and to give durability to, the article and, at the same time, produce an appealing finish.

Lusteroid Serves Hundreds of Manufacturers

Pride is taken in the fact that one of the most important of the Company's attainments is the high standard of its technical service. The full story of the development of modern Industrial Surface Coatings is a very lengthy and involved one, but hundreds of New Zealand manufacturers who are alive to the advantages to be gained by the presentation of their products in a finish both durable and eye pleasing, are content to rely on the Lusteroid service for the answer to their problems.

Close liaison between the sales staff and production workers on the one hand, and the customer on the other, has resulted, over the years, in a unique sales organisation which provides for direct distribution to the user.

A Full Coverage from Main Centres

With branches in Wellington and Christchurch, a full New Zealand coverage in sales and distribution is maintained. South Island requirements are met from Christchurch, where the Company has recently completed new premises designed to provide even better service to customers. The Wellington branch, centrally situated in Cable Street, takes care of the need for close liaison and personal service with Wellington industry.

For many years a private Company in New Zealand, Lusteroid has now been made a public company, and much interest is being shown by the investing public.

First Home on Auckland's Western Reclamation

Lusteroid Pty. (N.Z.) Limited was established 25 years ago, when the Board of Directors of the Australian parent Company decided that, in the field of surface coatings, New Zealand held undoubted possibilities. The Company's first home was a small building on Auckland's Western Reclamation, and during the next few years—those immediately before World War II—sound progress was made. Despite restrictions and trade difficulties which followed over the war years, Lusteroid was successful in making its mark as a reliable organisation undertaking a much-needed service to Industry in this country.

A Shift to Mt. Wellington and Plans for Future Expansion

With the post-war boom in industry when the developments arising from the needs of war could be turned with advantage to peacetime usages, activities were expanded until, in 1956, much larger factory and office buildings were erected in the growing industrial area of Mt. Wellington. This building project was carefully planned and designed, adequate attention being paid to the key factors of an efficient production line and congenial working conditions, with ample land available for future expansion.

Board of Directors

With strength and experience in its administration and control, the following personnel direct the Company's affairs at present:

Mr. J. D'Arcy-Irvine	- Chairman	(Australia)
Mr. J. C. Fletcher	- Vice-Chairman	(Auckland)

Messrs. R. M. Baikie (Australia), D. H. Steen (Auckland), R. P. Fraser (Wellington)
Manager for New Zealand: Mr. R. E. G. Sessions

N.Z. INSULATORS LIMITED Temuka, Canterbury.

(A manufacturing subsidiary of the National Electrical and Engineering Company Limited).

In 1923, the National Electrical and Engineering Co. Ltd. acquired the plant and business of Dominion Porcelain and Tile Industries Ltd., which had been established for some years at Temuka, some 94 miles south of the city of Christchurch in the Canterbury Province, South Island. The name of the old company was abandoned and a new company was registered under the title "N.Z. Insulators Limited", typifying the primary manufacturing intentions.

The early years of the new company were, not unexpectedly, difficult years. The foundations of the present widespread electricity supply industry had only recently been re-laid; the demand for electrical porcelain products was small but growing; there were the many manufacturing problems inherent in the processing of clays, and the understandable hesitancy on the part of the electricity supply industry to accept the local products, coupled with competition of imported insulators bearing the names of manufacturers of established repute.

The rapidly growing telecommunications and electric supply industries, however, realising the economic value of an industry almost wholly using indigenous raw materials, were not unsympathetic to the new venture. From the outset, the company adopted a progressive policy and established a laboratory for research and development under the care of a fully-qualified industrial chemist.

Nevertheless, progress was slow until the intense concentration in the United Kingdom and elsewhere on rearmament from 1938, followed by the outbreak of war in September, 1939. This development resulted in increasing difficulties in obtaining supplies of electrical porcelains from overseas sources and threw New Zealand to a growing degree upon its own resources. To meet this emergency, N.Z. Insulators was not ill-equipped, particularly since the bulk of its raw materials was naturally occurring.

Throughout the war and in the early post-war years, New Zealand was probably the only country in the world which did not suffer from a shortage of electrical porcelains within the range of the company's manufacture, which covered requirements up to, and including, 20,000 volts. Indeed, the plant at Temuka, through its selling agency, the National Electrical and Engineering Company, exported its products to Australia, South Africa, India, and even to England, in all of which countries they earned a high reputation for quality. Unfortunately, these export markets have progressively receded due to ready availability of supplies being re-established from sources within these countries, to the effects of import restrictions, and to increasing costs of manufacture in New Zealand. Despite these handicaps, and as a result of a progressive modernisation programme, the company is not without hope of re-establishing an export trade.

In 1941, N.Z. Insulators was asked by the New Zealand Government to undertake the manufacture of large numbers of Post Office type insulators for the use of the armed services of the Allied Nations in the Eastern theatres of war. Such quantities were beyond the existing plant facilities, but, with the assistance of the Government, a modern, electric, continuous tunnel kiln was built to an American design and housed in new buildings, while other essential manufacturing facilities were added. The new plant became operative in 1942 and thereafter all demands of the Eastern war theatre were met — without interruption in supply to the telecommunications and electricity supply industries within New Zealand.

In March, 1950, fire destroyed that section of the plant devoted to pressing, turning, casting and drying, but fortunately did not affect the clay processing section or the electric tunnel kiln. Despite the very extensive damage—the buildings and much plant were completely destroyed—extraordinary efforts on the part of management and employees quickly enabled a resumption of manufacture through all stages in roughly improvised shelters and on improvised machines. A happy result of the fire was that it greatly accelerated the rate of progressive modernisation, so that today all manufacturing activity is carried out in substantial modern brick buildings, all bricks, incidentally, having been made in the plant.

The company carries out all processing from the indigenous raw clays and feldspatic materials. In addition to the electric tunnel kiln already referred to, there is a modern oil-fired "Dressler" kiln, which is probably the largest tunnel kiln in the Southern Hemisphere. It was installed in 1955. Pressing and turning techniques, too, are already of world standards — indeed some turning methods are ahead of general practice overseas. In addition to the two tunnel kilns, there is an oil-fired intermittent kiln.

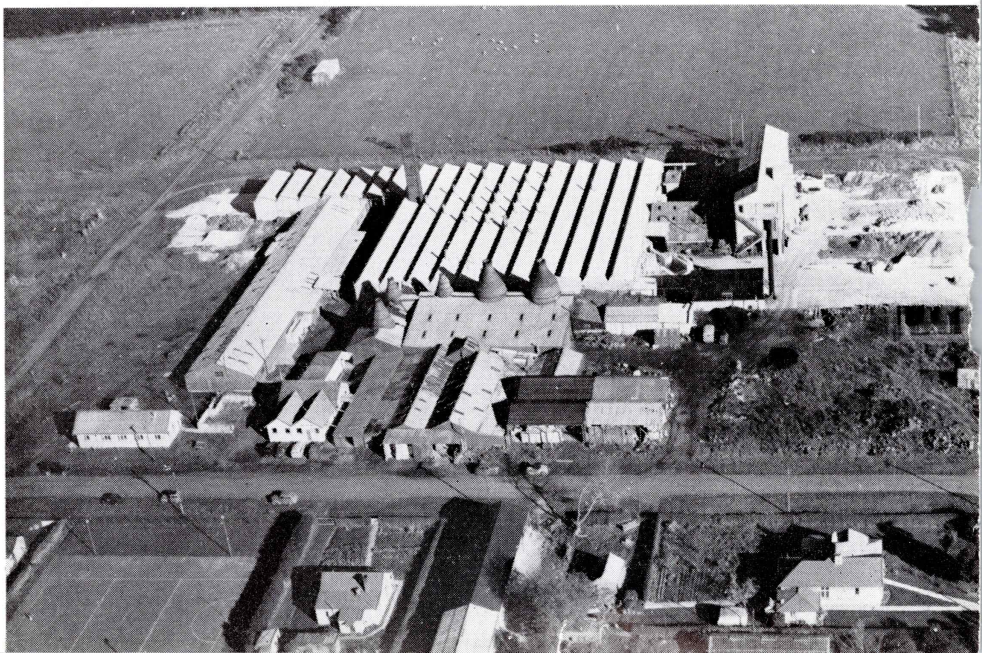
Of recent introduction is the manufacture of floor and wall tiles, again utilising the latest design of automatic tile press.

Laboratory facilities have been kept up-to-date and two fully qualified chemists are employed.

The range of ware regularly manufactured is a wide one. It includes: pin type insulators, for voltages up to and including 33,000; guy, strain and shackle insulators; power transformer and other bushing insulators; pole cut-outs and fuse-shackles; indoor type fuses up to 30 amperes rating; refractory components; insulating and acid-resisting bricks; raschig rings; floor and wall tiles and certain lines of hotel-ware. Customer special product manufacture is also undertaken.

At the present time, 1958, the number of employees is approximately 150.

All sales are effected through the parent company, the National Electrical & Engineering Co. Ltd., whose head office address is P.O. Box 1055, Wellington.



FACTORY OF N.Z. INSULATORS Ltd., Temuka. This company is a manufacturing subsidiary of the National Electrical and Engineering Co. Ltd.

Photo: Whites Aviation.

GREEN & HAHN
CH-CH

FIRESTONE TIRE & RUBBER COMPANY of NEW ZEALAND LIMITED

84 Langdons Road,
Christchurch

On June 1, 1948, there occurred an event of outstanding importance in the automotive history of New Zealand — the first pneumatic tyre to be made in the country was produced in the Firestone Tire and Rubber Company Limited's factory in Christchurch.

The difficulties of the rubber-starved war years were still fresh in the memory of the country's thousands of motorists and transport operators, and it must have been with a sense of relief that they welcomed the establishment of the industry in New Zealand. In the latter part of 1945, the tyre industry was licensed in this country and, early in 1946, it was announced that the Firestone Tire and Rubber Company of New Zealand Limited would establish a plant in Christchurch.

Logical Factory Flow

The construction of the buildings on the chosen site in Langdons Road, Papanui, was completed in 18 months, and the Company was a going concern in well under two years from the commencement of building — a credit to all who contributed to the highly efficient completion of the project. A supervising engineer and several assistants were sent to New Zealand by The Firestone Tire and Rubber Company, Akron, Ohio, U.S.A., to oversee the construction of the factory and the installation of the equipment, the whole project being under the control of Mr. H. G. Miller, the New Zealand Company's Managing Director. The architects for the factory building were Structon Group Architects, Wellington, and contractors Chas. S. Luney Limited, Christchurch. Some items of the specialised equipment and machinery were procured from the U.S.A., but a large part came from Australia and Great Britain. New Zealand manufacturers also provided substantial parts of the factory equipment.

Above: A NIGHT PHOTOGRAPH OF THE FIRESTONE FACTORY, LANGDONS ROAD, CHRISTCHURCH. The decorations were in honour of the visit of Her Majesty Queen Elizabeth the Queen Mother, February, 1958. Photo: Green & Hahn.

The factory, of single-storey construction, is designed for a logical and systematic flow of materials from the initial stage to the finished goods. The plant is laid out in such a manner that the uninitiated visitor can readily follow the various processes of production. Cleanliness is of paramount importance, and even the mill room and powerhouse are impressively clean and orderly. The large water storage reservoir is quite a structure in itself, while the quality of the artesian water so readily available is entirely in accordance with the needs of the industry. Direct rail sidings off the main north line provide convenient facilities for coal and raw materials inward, and finished goods outward.

High Standard of Amenities

This factory sets the highest standard in its amenities. Non-inflammable material was extensively used in its construction. Excellent use has been made of fluorescent lighting, and the strict attention to detail is shown in the wide employment of windows, with carefully spaced ventilating sashes. Provision made for cross ventilation was an outstanding success. There are cowl ventilators in the roof, fitted with high-powered fans in those sections of the building where forced ventilation is desirable for comfort. The cafeteria is first-class and contains the very best of modern equipment. There is a dispensary with a trained nurse in attendance, steam drying rooms for wet outer clothing, and well appointed locker rooms, and wash and shower rooms.

PANORAMIC VIEW OF THE FIRESTONE PLANT AND ADMINISTRATIVE OFFICES. Since the original building was erected in 1948, two extensions have been added and present total capacity is more than double the originally rated daily production. Photo: Green & Hahn.

Attractive Exterior

In common with other industrial concerns in Christchurch, the Firestone Company has also given the most careful attention to exterior lay-out. The attractiveness of the grounds and gardens reflects great credit on those responsible for the planning and maintenance.

How Tyres are Made

The processes of the manufacture of a pneumatic tyre can be simply classified into three stages: mixing, prefabrication, and vulcanizing or curing.

There are a wide range of raw materials involved, the most important of these, in quantity consumed, being: rubber, fabric, carbon black, sulphur and beadwire. The crude rubber, together with precise quantities of carbon black, sulphur, and many important minor ingredients, are first fed into a Banbury Mixer and completely mixed. This stock is then passed through giant mills to give a further mixing. Stocks of various types are used for tyre treads, inner tubes, tyre sidewalls, and also for pressing on to the plies of fabric. The tyre tread rubber is extruded to the particular dimensions and thickness required for each size of tyre.

Fabric Preparation

The tyre fabric is prepared by first being passed through a 'gum dipping' process, which impregnates the fabric with liquid rubber and other essential ingredients to ensure perfect bonding of the casing. The fabric is then passed through a calender and, in this process, compounded rubber is pressed on each side of the material to a precision thickness, this process completely insulating each cord of the fabric.

The calendered rolls of fabric are next put through a machine called a bias cutter, and here the fabric is cut into strips or tyre plies of specified widths. All tyre fabric is cut on the bias to produce the maximum length of cord from which the body of the tyre derives its strength, flexibility, and resistance to road shocks.

The tyre beads are prefabricated from high tensile, bronze-coated steel wire of exceptional strength. The strands of wire are drawn off spools, insulated with compounded rubber, and wound to the exact circumference to fit the particular size of tyre.

The Tyre Reaches its 'Doughnut' Shape

All the component parts of the tyre are brought together in prefabricated form in the Tyre Assembly Department, and are assembled into the complete unit on a tyre assembly machine. The fabric body of the tyre is built up on the rotating drum, ply by ply, beads are inserted and tread rubber and sidewall rubber applied and, finally, the drum is collapsed and the completely constructed tyre removed.

The 'Green Tyre', as it is called at this stage, is hardly recognisable as the perfectly finished article finally fitted to the vehicle. However, the next stage in manufacture, known as bagging and forming, gives the tyre its doughnut shape and, at the same time, inserts a heavy curing tube, which has an extremely important function in the final curing process.

A Unit of Excellence and Quality

The tyre curing stand, or vulcanizer, is equipped with a steel mould which, under extremes of heat and pressure, gives the finished tyre its precision measurements, its tread pattern

and sidewall designs and, under the most exacting automatic process, welds the complete tyre into a unit of unexcelled workmanship and quality.

Supplementing the most careful and highly qualified supervision of actual manufacture in the various departments, a team of development and laboratory personnel is constantly at work testing and checking raw materials, components and processes. The laboratory is fully equipped to meet this exacting checking process, and is backed by the parent company's huge research laboratory in the United States.

Operating to Capacity

By the end of 1949, daily production was in excess of that for which the factory was designed, and the volume has consistently advanced since that time.

At the time of commencement of operations, a team of 16 highly skilled supervisors was brought to New Zealand from overseas to start the factory off on a fully efficient basis. These men, all of whom had very long service with the Firestone organisation, were selected for their special qualifications of leadership and teaching ability, and no industry in New Zealand could claim to have planned a more careful and precise inauguration of its activities in this country. In the years that have elapsed since production commenced, all but six of the supervisors have returned to the U.S.A., leaving trained New Zealanders to carry on in their stead.

Factory Capacity has Doubled since '48

In selecting the Langdons Road site, the Company took a prudent view of future possibilities, and the total area of just over 23 acres appears adequate to meet development in the years to come. However, expansion was certainly not long delayed. During 1951, the construction of an extension to the original factory building was commenced to increase the floor area by one-half. This extension was completed towards the end of 1952.

Again in 1954, the continued increase of the motor-vehicle population of the country and the consequent greater demand for tyres and tubes for both replacement and original equipment purposes, called for further expansion of the Firestone plant. Another wing was added to the factory building on the north side, bringing the total floor area up to 159,517 sq. ft. This extension was completed in July, 1955, and the additional equipment was installed by the end of that year.

The present total capacity of the factory is considerably more than double the originally rated daily production for tyres, tubes and repair materials.

Vastly Expanded Range

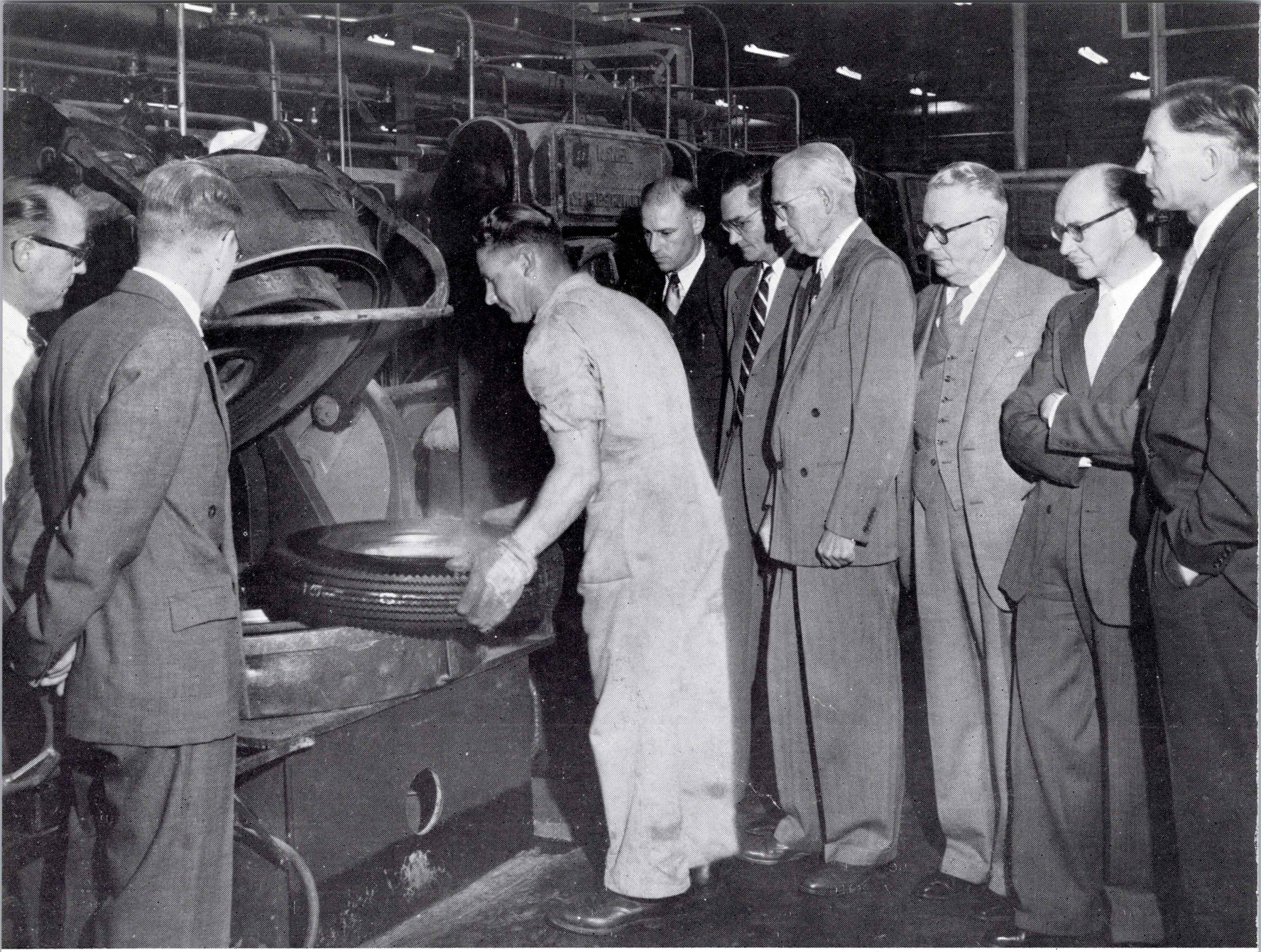
In the 10 years which have passed since the Firestone plant was established, the Company has been called upon to meet the constantly changing needs of the automotive industry. The factory commenced operations with a range of 30 sizes and types of motor car and truck tyres: at the present time it is producing a range of 106 sizes and types of tyres — the range has nearly quadrupled in 10 years. The millionth tyre was produced by Firestone in February, 1955.

To the original range of car and truck tyres and tubes produced, the following additions have been made: motor-cycle tyres and tubes, farm tractor tyres and tubes, tubeless tyres for cars. The constantly changing design of cars and trucks calls for the introduction of new sizes and, since 1948, a full range of 13in., 14in., and 15in. rim diameter car tyres has been added. To meet the needs of varying conditions of operation, five different types of truck tyres are now produced by Firestone in all popular sizes.

Keeping Pace with Vehicle Needs

No industry can claim more frequent change and continued progress than can the automobile industry. The tyre

(Continued over)



THE MILLIONTH FIRESTONE TYRE OFF THE PRODUCTION LINE: (February, 1955) Executives of the Company watch as a supervisor removes it from the mould. Photo: Green & Hahn.

manufacturer is required to keep pace with the ever-changing needs of the vehicle — to devote exceptional effort to research and development. The parent Firestone Company is a leader in research and development and the whole of its vast resources are at the disposal of the New Zealand Company. The New Zealand vehicle owner is secure in the knowledge that the product delivered from the Firestone plant at Christchurch incorporates every last improvement and refinement, and that Firestone New Zealand maintains the Company's world-wide standards of product excellence. Furthermore, the local factory is strategically situated to build into its products those additional features which are the peculiar need of New Zealand conditions.

Management

The Firestone Tire and Rubber Company of New Zealand Limited has been marketing Firestone products in this country for well over 30 years, but prior to 1948 all stocks were imported.

The present Directors of the Company are:—Mr. H. G. Miller, Managing Director, who has been the Company's chief executive since 1929; Mr. W. C. Rankin, Director of Production and Factory Manager; Mr. E. G. Garbutt, Director of Finance and Secretary-Treasurer; Mr. J. G. Barcham, Director of Sales.

Marketing

The Company operates its own branches in Dunedin and Invercargill. For the whole of New Zealand outside of Otago and Southland, district distributors are responsible for the marketing of all Firestone products for replacement purposes. The Firestone Distributor organisation is as follows:—Auckland Province: Firestone Tyre Distributors Co., Auckland; branches at Whangarei and Hamilton. Gisborne: Thos. Corson and Son Limited. Taranaki, Wanganui and Main Trunk: Firestone Tire Distributors Co., Wanganui; branches at New Plymouth and Palmerston North. Wellington, Wairarapa, and Horowhenua: Tire Distributors Limited, Wellington; branch at Masterton. Hawke's Bay: Firestone Tyre Distributors Co., Hastings; branches at Napier and Wairoa. Nelson and Marlborough: Firestone Tire Distributors Co., Nelson; branch at Blenheim. Canterbury and Westland: Canterbury Tyre Agency Company Ltd., Christchurch; branches at Timaru and Greymouth.

Firestone warehouses, carrying full stocks to service the requirements of tyre resellers throughout the country, are operated at the 19 points above detailed.

The Industry behind all Industry

NEW ZEALAND INDUSTRIAL GASES LIMITED

Hutt Park Road, Lower Hutt

The story of the foundation and progress of every big industry is usually a story of romance, and it is usually centred around the personality of one individual. Such is the story of the establishment and progress of an industry which was not only the pioneer industry in its field, but which remains, in connection with most of its products, the only industry of its kind in the Dominion to-day. The Company is New Zealand Industrial Gases Limited. From the courage, vision and resourcefulness of the original founder, J. H. Edmundson, has grown a vast network of factories spread throughout New Zealand, employing a staff of 436 — a far cry from the early days when the whole staff numbered one man and two boys, besides Mr Edmundson.

An idea that started an Industry—

In 1907, a Mr Hawkins, who was in the motor business, went for a trip to England. Whilst motoring one day, he took his car into a garage, telling the attendant to see that his headlights were in order, as he intended to use the car that evening. The attendant asked if he had ordinary headlights or D.A.

"D.A.!" exclaimed Mr Hawkins, "What is D.A.?"

The answer came, "Dissolved Acetylene".

Enquiring further, he found that the Acetylene Illuminating Co. Ltd., of London, was supplying small cylinders of compressed and dissolved acetylene for use in motor car headlights. Returning to London, he visited the factory, saw the new method of supplying acetylene and was so impressed that he secured an option for the New Zealand agency.

At this time, Mr J. H. Edmundson was managing Messrs. Hawkins and Rome's business, and on his return to New Zealand, Mr Hawkins discussed the question of the D.A. agency with him. On investigation, Mr Edmundson found that acetylene in the dissolved form, in conjunction with oxygen, was just coming into use in England for the autogenous welding of all classes of metals. It occurred to him that this new method of welding would be useful in this country. Having this vision, he decided to introduce the process to New Zealand iron and steel workers.

The Formation of a Company—

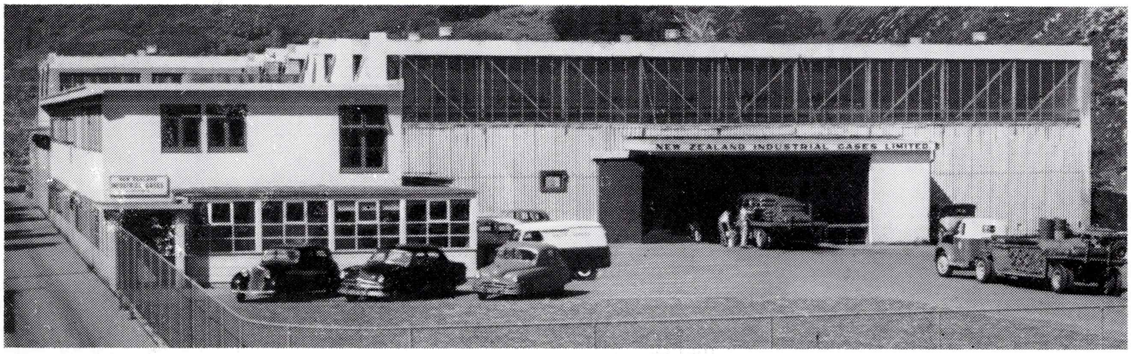
In 1909, he formed a small syndicate, called the Acetone Illuminating and Welding Co. Mr Edmundson was appointed manager, the necessary machinery and apparatus were imported, and the work of establishing the present business was begun.

From 1 Factory to 14 Branches — and Depots at Strategic Points

The first factory erected was a corrugated iron structure at the corner of Owen Street and what was then Faulknor Street, Napier. Within two years, the business had made great strides and it had been clearly demonstrated that the necessary gases could be made successfully, and, moreover, that the engineering trades were willing to adopt the oxy-acetylene process. The Company was intent on obtaining the highest standard of purity with its products, and, to enable this to be achieved, it was decided to float a limited liability company. This was done early in 1911 and, by the middle of the year, Mr Edmundson was on his way to England and Europe to make an on-the-spot study of the oxy-acetylene welding process, and the various methods of producing high-quality oxygen in commercial quantities. His choice fell on the liquid air method, and he purchased a Linde Plant from the British Oxygen Company.

By 1924, the business of the Company had grown so appreciably that it was found necessary to erect a factory in Wellington. The Company now has factories established at Napier, Auckland, Wellington, Christchurch and Dunedin. To-day, these have been added to, and additional and trading branches established at Hamilton, Rotorua, Whangarei, Palmerston North, Stratford, Gisborne, Nelson and Invercargill.

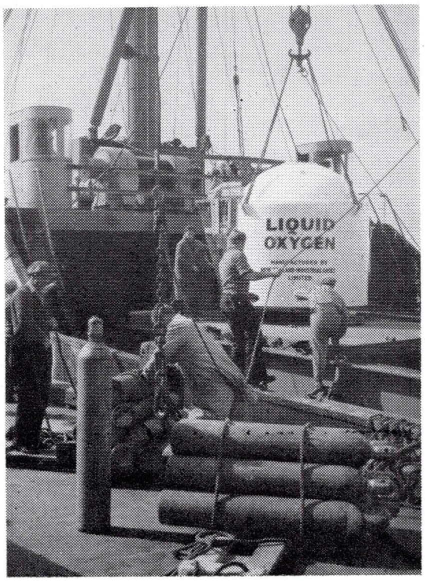
The development of the oxy-acetylene process of welding in New Zealand is concurrent with the history of New Zealand Gases Limited, and with the Company's developments over the years. The manufacture of oxygen by the liquid air process is a fascinating combination of physics, chemistry and engineering. Briefly expressed, the process consists of first liquifying air by self-intensive effort introduced by Linde in 1895, and in then submitting the liquid, within the same apparatus, to a special process of rectification, by which means oxygen of the highest purity is obtained.



HEADQUARTERS of New Zealand Industrial Gases in Hutt Park Road, Lower Hutt City.

Latest Developments—

During the last five years, capital expenditure has exceeded £579,000. The main project completed last year was the erection of a new dissolved acetylene factory at Penrose, Auckland, which comprises a generator house, carbide store, and filling floor. Practically all existing plant has been replaced with modern equipment — the total cost of the buildings and plant was more than £70,000. The new factory came into production last April. Store buildings at Auckland, Wellington and Christchurch were also finished during the period, as well as a new acetylene factory at Dunedin.

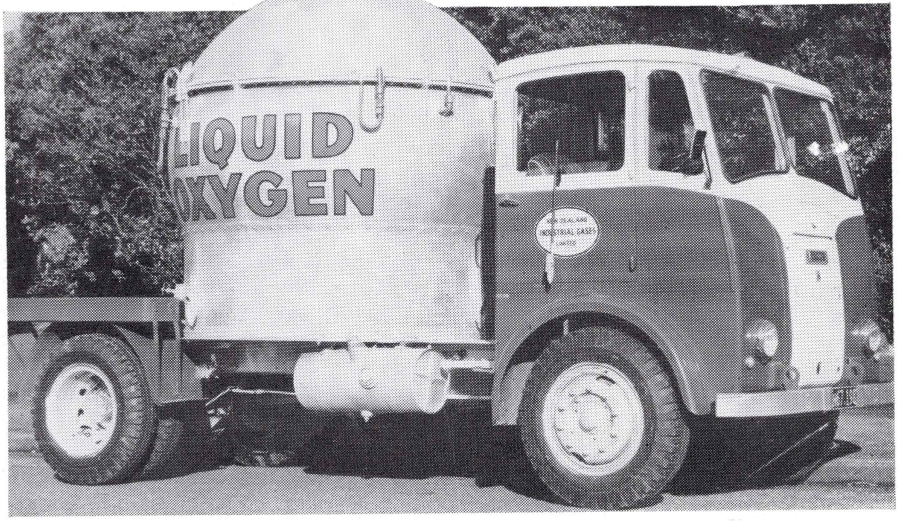


DURING THE REORGANISATION of the Christchurch branch it was necessary to transport liquid oxygen in bulk to the South Island.

Use of Gases in Industry—

In industry, gases are used on the widest scale. Practically every metal article, from a battleship to a bicycle bell, owes something to the products or processes developed after many years of research. A prime example is the use of oxygen for cutting steel. In shipbuilding and heavy engineering, oxygen cutting is a 'butter knife', cutting thicknesses and shapes with a speed and precision otherwise impossible. Heavy profile cutting, for instance, can shape quickly, and within relatively short fine limits, a 25-ton crankshaft from a massive block of steel, the only alternative being a costly forging.

Many of these gases are rare, and are present in the air we breathe in very minute quantities — neon, helium, krypton, xenon, argon. Each one has its own special place in industry, medicine or science, and all are handled by New Zealand Industrial Gases.



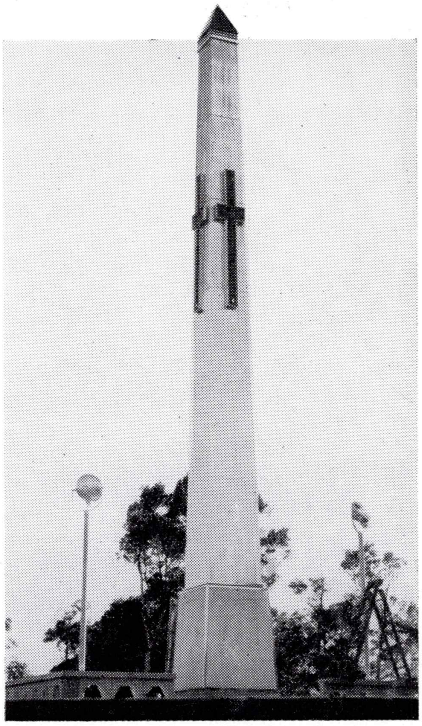
THE GIANT TANKER used for the transport of liquid oxygen.

In every million volumes of air there are eighteen volumes of neon, and six volumes of helium. There is one volume of krypton in 20,000,000 volumes of air, and one volume of xenon in 170,000,000 volumes of air. Argon, the least rare of the rare gases, constitutes just under one per cent of the atmosphere. Helium is a non-inflammable gas, valued for its low specific gravity, and is also used as a medical gas. "Diver's Bends", an affliction common to deep-sea divers, is alleviated by the inhalation of a helium and oxygen mixture. Krypton and xenon also have their vital uses in special duty lamps for scientific and industrial purposes. The high duty bulbs in miners' lamps are filled with rare gases of this kind. Argon has become indispensable to industry, chiefly through the development of the Argonarc Welding Process. Its uses include the welding of stainless steel, aluminium, magnesium and their alloys, and also precious metals.

The chief obstacle in welding aluminium is oxide formation, which prevents fusion. Before the advent of Argonarc, the use of flux was essential in order to break down this oxide. Most fluxes are corrosive and they present a danger in themselves unless every trace is subsequently removed — often a laborious and expensive operation. Argonarc dispenses entirely with flux, since the weld is made within a shroud of inert argon gas. The shroud protects the weld from the atmosphere and prevents oxide formation. Wherever there are joints to be made or stainless steel, Argonarc is to the fore.

In the Factory—

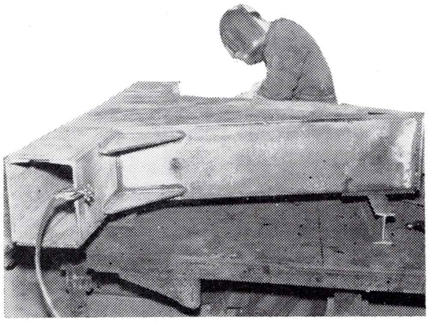
Steel sheet and plate is the basis of a multitude of products in all classes of industry — industrial plant, washing machines, everything in fact, from heavy equipment, to the appliances familiar in every home. With oxygen machine-cutting, plate and sheet is cut singly or in stacks to a degree of accuracy and finish which can eliminate the need for further machining. The well-known oxy-acetylene blowpipe has a thousand uses in repair, reclamation and light construction, and is universally employed throughout the world.



WAR MEMORIAL AT PARAHAKI HILL, WHANGAREI. This tower was fabricated out of stainless steel welded by the Argonarc process. Photograph: "Northern Advocate".

Electric Arc Welding—

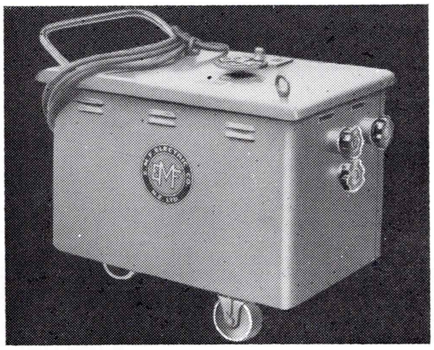
Early in 1950, New Zealand Industrial Gases purchased the interests of the E.M.F. Electric Co. Ltd. This Company manufactures, and New Zealand Industrial Gases now distribute throughout New Zealand, all types of electric arc-welding equipment from E.M.F. electrodes to heavy duty arc-welders. Just recently, a new electrode machine was installed which will increase productive capacity by 100 per cent, besides making for greater flexibility in meeting exceptional demands for types and gauges outside the normal production programme.



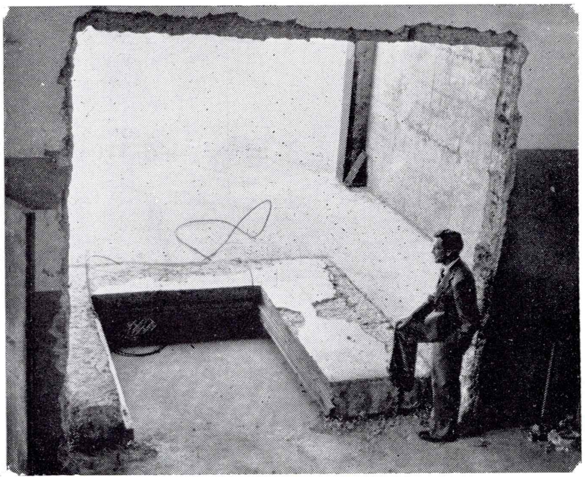
FABRICATING THE DRAW-BAR of an earth-moving machine by electric arc welding.

In Medicine and Surgery—

The great advances made by gaseous anaethesia and oxygen therapy during this century would not have been possible, nor would the benefits have become universally available to suffering humanity without the development of a reliable service for the supply of medical gases and efficient apparatus for their administration. In both spheres, the contribution of New Zealand Industrial Gases Medical Division in this country has been outstanding. Gases and apparatus are delivered promptly wherever they may be needed. This service has been built up in response to, and in complete accord with, the needs of the medical profession. It is in every way a personal service, and one in which round-the-clock needs are met with as a matter of normal routine. The range of apparatus available through New Zealand Industrial Gases meets the needs of the general practitioner, the dentist, and the veterinary surgeon. Gases and apparatus supplied by the Company are to be found in hospitals, maternity homes, school clinics, factories, etc. In this, and in the industrial field, skilled engineers are always available to maintain and service apparatus to the highest standard of efficiency.



AN E.M.F. PORTABLE arc welding plant.

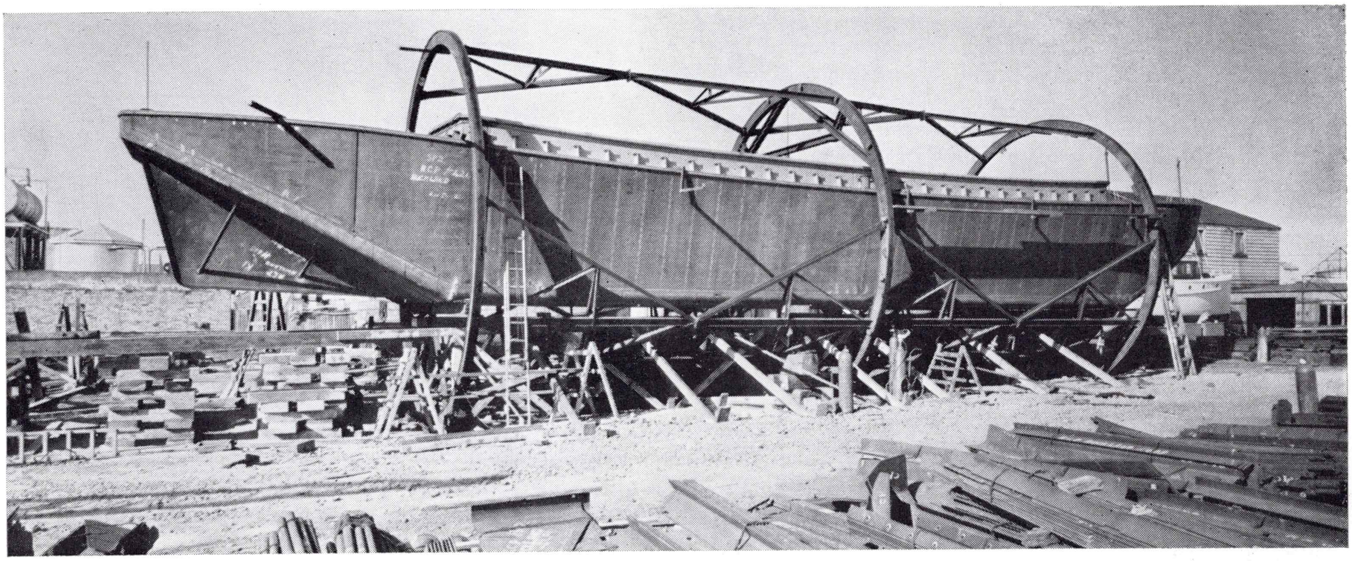


A SPECIAL FORM OF OXYGEN LANCE is used for thermic drilling in stone and masonry. Here is a section of a concrete wall which has been entirely removed.

Vast Network of Associate Companies throughout the world—

New Zealand Industrial Gases are an affiliated company of the vast British Oxygen Group which numbers 34 independent companies scattered over the whole globe. This huge chain of companies employs over 16,000 men and women in the service of industry, medicine and science. The Group's overseas works number 116 – in Africa, India, Hongkong, Canada, Australia, Eire, Burma, Malaya, Norway, New Zealand, etc.

AN ALUMINIUM ALLOY TRUCK BODY welded by the Argon process.



THE WELDED HULL of a lighter being built in Auckland.

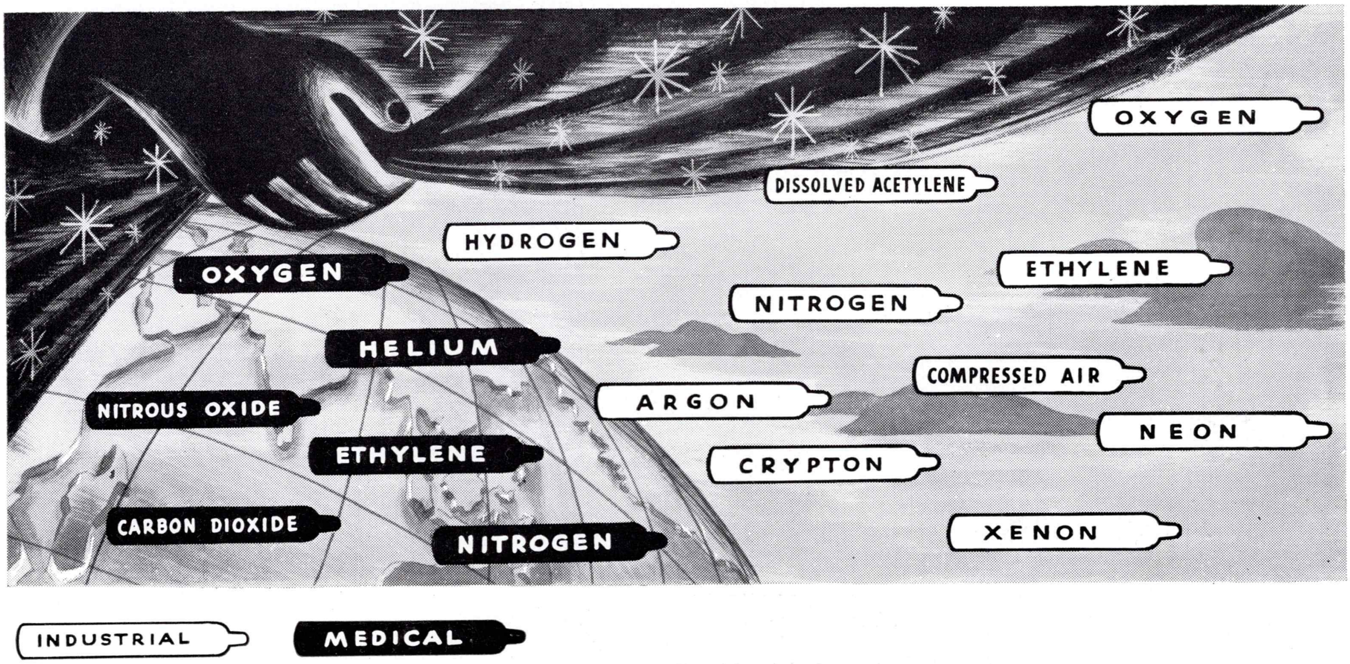
Board of Directors—

The present Board consists of:
J. W. Sandtmann (Chairman)
J. S. Butler
C. W. Salmon
D. M. Young
T. G. Hull
and four Executive Directors:—
C. D. Edmundson (Managing Director)
E. D. Edmundson
T. C. Laidlaw
W. G. Anderson

Wide Variety of Products Manufactured—

The Company's activities now embrace a wide field. On the industrial gas side, oxygen, dissolved acetylene, hydrogen and nitrogen, are being manufactured in New Zealand. Oxygen, nitrous oxide and cyclopropane are being supplied to the medical profession, as well as anaesthetic apparatus.

The Company also manufactures equipment for gas and electric welding, and Electrodes for Electric Welding.


OXYGEN
DISSOLVED ACETYLENE
HYDROGEN
ETHYLENE
OXYGEN
NITROGEN
HELIUM
COMPRESSED AIR
ARGON
NITROUS OXIDE
NEON
ETHYLENE
CRYPTON
CARBON DIOXIDE
XENON
NITROGEN
INDUSTRIAL
MEDICAL

CONSOLIDATED PLASTIC INDUSTRIES (N.Z.) LTD

National Brush Company (N.Z.) Ltd
Plastic Moulders (N.Z.) Ltd
Custom Moulders (N.Z.) Ltd
Extruded Plastics (N.Z.) Ltd

Factory and Office: 650-656 Great South Rd, Ellerslie, Auckland

Like many of our major industries, the largest plastic manufacturers in this country, known collectively as Consolidated Plastic Industries (N.Z.) Ltd, sprang from small and humble origin.

Back in 1925 the National Brush Company (N.Z.) Ltd was formed, with capital of £3,000, situated in small premises in Anzac Avenue, Auckland. Two years later, a shift was made to Manukau Road, where, with 2,000 square feet and 12 of a staff, this factory specialised in the manufacture of toothbrushes — made by hand of pig bristle, and bone handles.

At this stage Mr. H. L. Lewis joined the Company as Engineer-Manager, and he has since guided the development and expansion of the original Company to its present wide plastic ramifications, which he directs as General Manager.

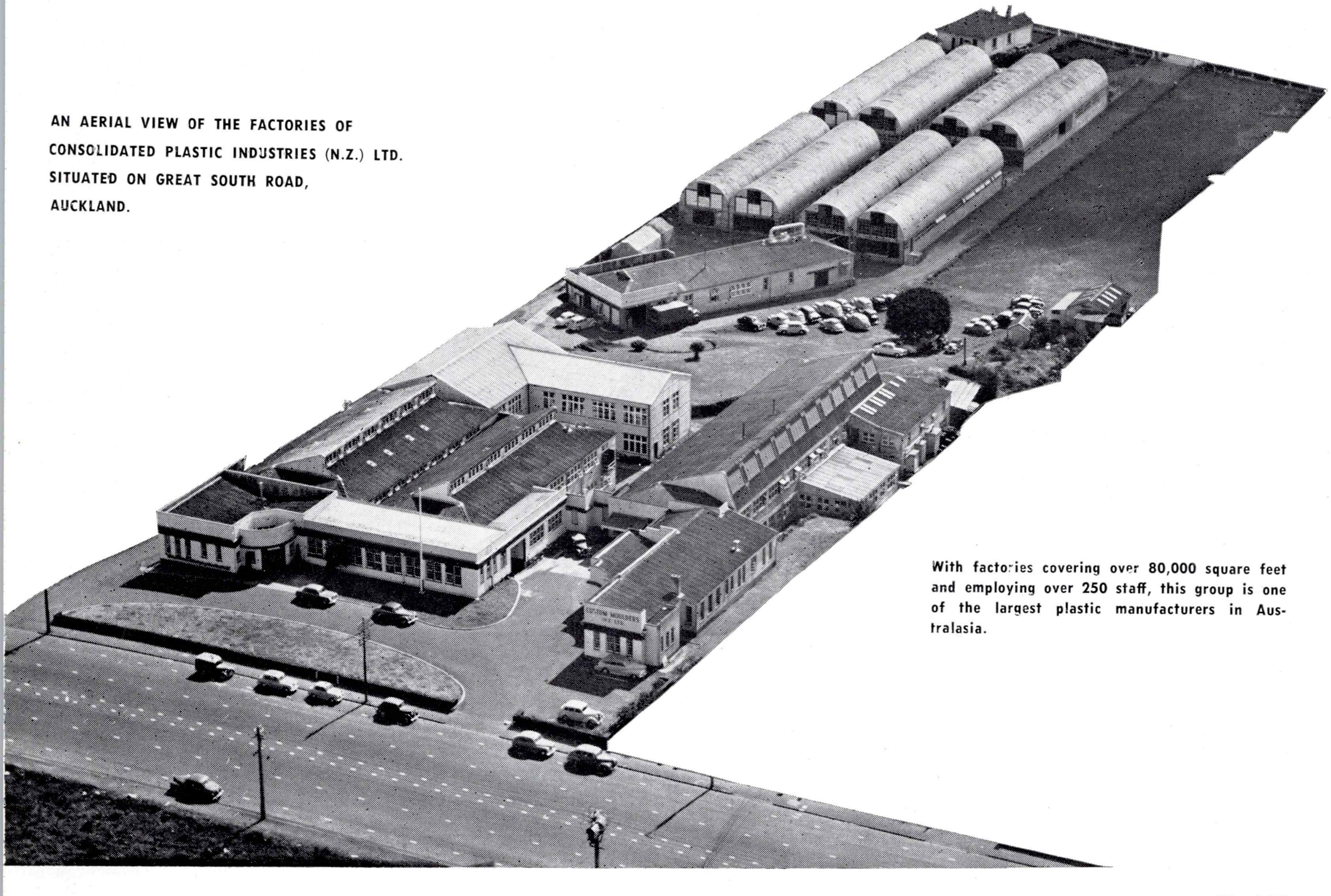
Despite the very keen competition from imported toothbrushes, particularly from Japan, the Company increased its share of the market and showed good progress and enterprise in entering the production of other toilet articles, such as hair brushes and nail brushes.

Nylon overcomes a difficult situation

The outbreak of war in 1939 presented a problem to all toothbrush manufacturers throughout the world, as all raw materials—bristle, and bone or celluloid handles—were almost exclusively procured from China and Japan. Fortunately, this situation was met by the development of nylon to supercede bristle, and the production of plastic handles was perfected in England.

In keeping with its progressive policy, the National Brush Company imported in 1942 the first injection moulding machine

AN AERIAL VIEW OF THE FACTORIES OF CONSOLIDATED PLASTIC INDUSTRIES (N.Z.) LTD. SITUATED ON GREAT SOUTH ROAD, AUCKLAND.



With factories covering over 80,000 square feet and employing over 250 staff, this group is one of the largest plastic manufacturers in Australasia.

in order to become self sufficient in the manufacture of brushware handles. This development called for larger premises, and with great foresight the directors purchased four acres of farmland on Great South Road, in the Ellerslie Borough, where the present factories, totalling over 80,000 square feet, now stand.

Today, the National Brush Company is the largest manufacturer of Toilet Brushware in this country, producing a very wide range of Toothbrushes, Dental Brushes, Nail Brushes, Hair Brushes and Brush Sets, which are most favourably known on the market under the trade name "Protex".

Production expands to other Plastic lines

From plastic brushware handles, production expanded to plastic Combs, Toys and Kitchenware, with a corresponding increase in machines and plant.

Plastics revolutionised the nature of these commodities. In Combs, made from cellulose acetate and polystyrene, a very wide range, in attractive colours at low prices, has resulted. In addition, their production in nylon has resulted in combs being virtually unbreakable and able to be sterilised by boiling.

Plastics have resulted in a tremendous variety of interesting, novel and realistic toys, with superior design details, together with the advantages of low prices through mass production. Their production in the more recently developed flexible material, Polythene, has greatly enhanced their strength, and resistance to normal abuse, and renders such toys virtually unbreakable.

Kitchenwares have been completely transformed in plastic by reason of the better designing, greater utility and colourful attractiveness thus possible. One of the largest moulding machines in the Empire enables the production of large plastic items such as Laundry Baskets, Rubbish Bins, Baby Baths, Toilet Seats and Buckets, etc., which have been vastly improved through the many advantages of plastics.

To administer this rapidly growing plastic manufacturing section, the first subsidiary Company, Plastic Moulders (N.Z.) Ltd., was formed in 1942, a pioneer of the plastic industry in this country. Today, this Company ranks as one of the largest injection plastic manufacturers in Australasia. Equipped with most up-to-date plant from England and America, this Company operates over 20 injection moulding machines, 24 hours a day, six days a week.

The resultant very large manufacturing capacity requires a great number of moulding dies to maintain full production. Many of these dies are made here by an associated company, but the majority are hired from other leading plastic manufacturers in Australia, America and England. As a result, this Company is able to provide a very wide range and selection of the world's best plastic products for the New Zealand market. Consequently, import control has no adverse effect upon the variety and wide consumer choice of plastic Kitchenwares, Toys and Combs.

The various products of this Company are found in every home in the country, and have earned a high reputation, as well as being unconditionally guaranteed. Accordingly, the brand names of "Protex" combs, "Gayware" kitchenwares and "Gayplay" toys are recognised as the best quality, utility and value in these fields.

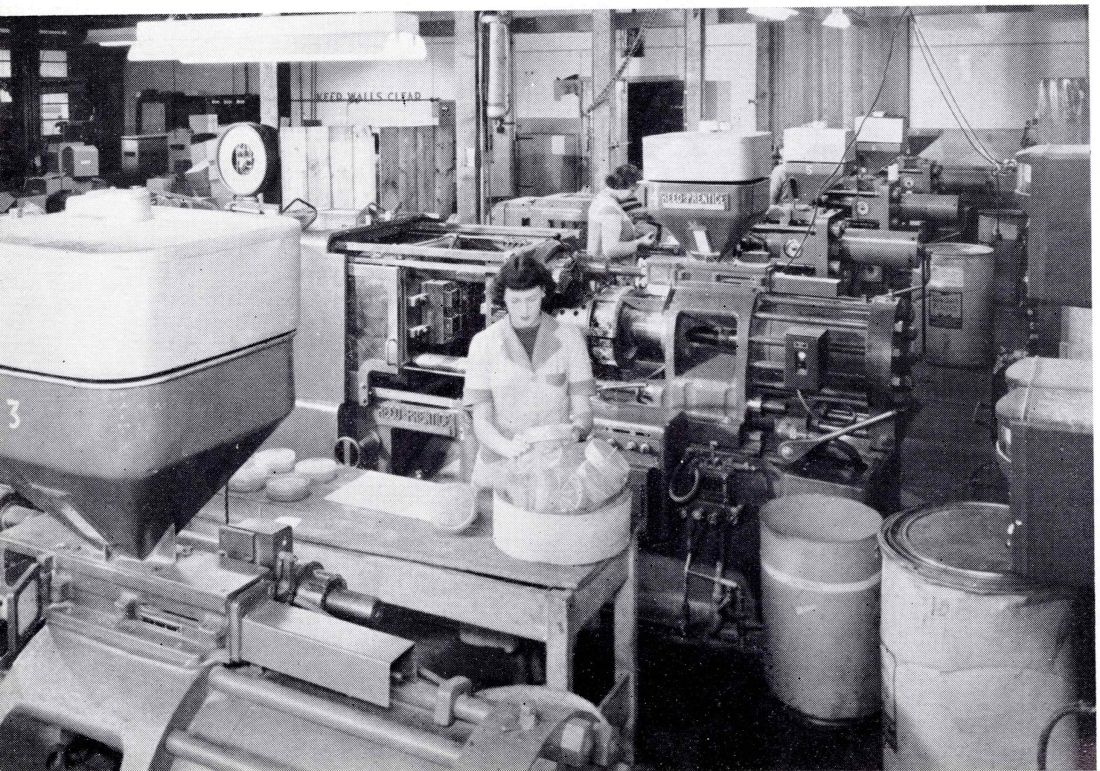
Plastics for Industry

In addition to consumer lines, this Company and its associated Company — Custom Moulders (N.Z.) Ltd. — produce a very wide range of plastic components for other manufacturers. In particular they provide the refrigeration, radio, household appliance, lighting, cosmetic, and many other industries with injection or compression moulded parts to the exact requirements of their applications.

Custom Moulders is equipped with the most up-to-date toolroom in this country for the construction of the intricate moulding dies. The specialised knowledge, experience and know-how in both toolmaking and moulding, ensures complete satisfaction in plastic components of all types.

In addition to toolmaking, Custom Moulders specialises in the compression moulding of thermo-setting materials, such as phenol, urea and melamine, in a very wide range of industrial components. These materials provide heat resistance, electrical insulation, and other specialised qualities, as well as colour appeal, required in plastic components for other industries. Such large items as agitators for washing machines, radio cabinets, etc., are produced on one of the largest presses in New Zealand.

Another field of manufacture is carried out by Extruded



A SECTION of the Injection Moulding Department of Plastic Moulders (N.Z.) Ltd., which operates 24 hours per day, 6 days a week.

Plastics (N.Z.) Ltd., which specialises in the extrusion of plastic materials for the production of water pipe, garden hose, gaskets and industrial components. One of its most important products is "Protex" water pipe, with sizes ranging from ½in. to 2in. bore, which is superior to metal pipes for cold water reticulation, and thus ideal for farm and agricultural use. "Protex" pipe is made from polythene, and is guaranteed forever against rot, rust and corrosion, as well as having many other advantages such as durability, lightness, and ease of installation.

Plastic bottles—flexible, unbreakable, in many sizes and colours

A recent development is the production of flexible bottles by a patented overseas process, ranging in size from 1-oz. to 1 gallon bottles. Provided with various spray nozzles and printed in colours, these bottles provide most attractive packings for cosmetics, household sprays, liquids, etc., with the additional advantages of being unbreakable.

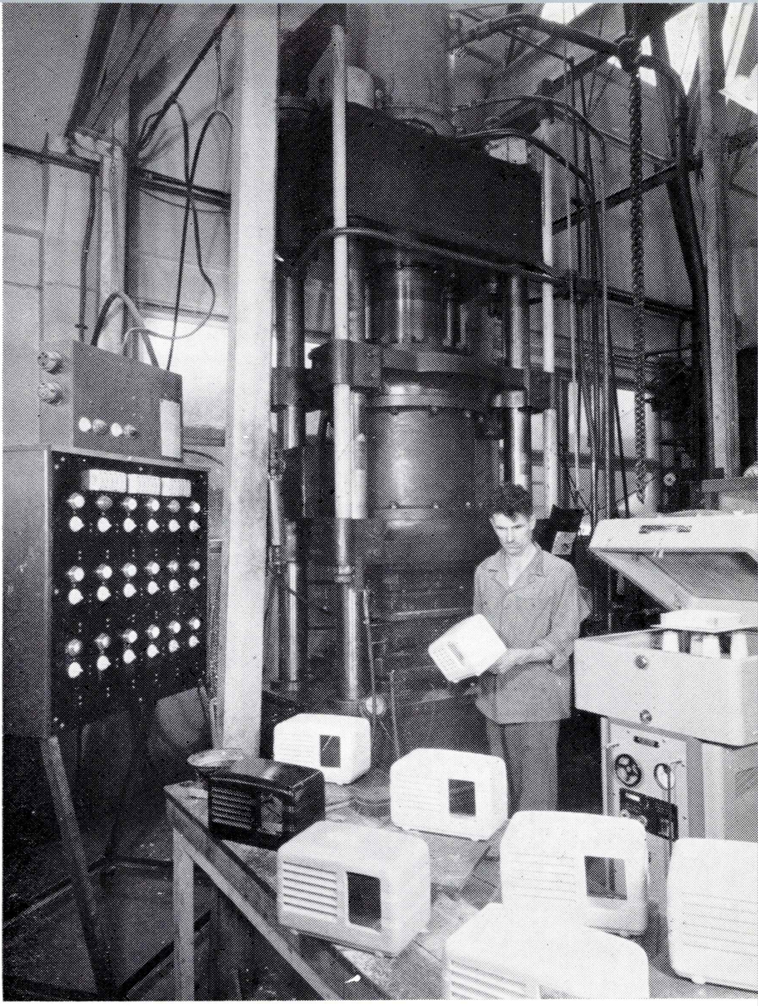
While the brevity of this report can only touch on some of the diversity of plastic production carried out by this group of manufacturers, it clearly indicates that New Zealand is keeping steady pace with the best of overseas plastic productions.

Further expansion and development in these and new fields of plastic manufacturing is planned, in keeping with overseas developments. To this end, executives and technical personnel make frequent trips abroad to keep fully informed upon the latest developments, applications and manufacturing techniques in the ever-widening field of plastics.

Directing and administrating this progressive organisation are the following men of experience and enterprise—

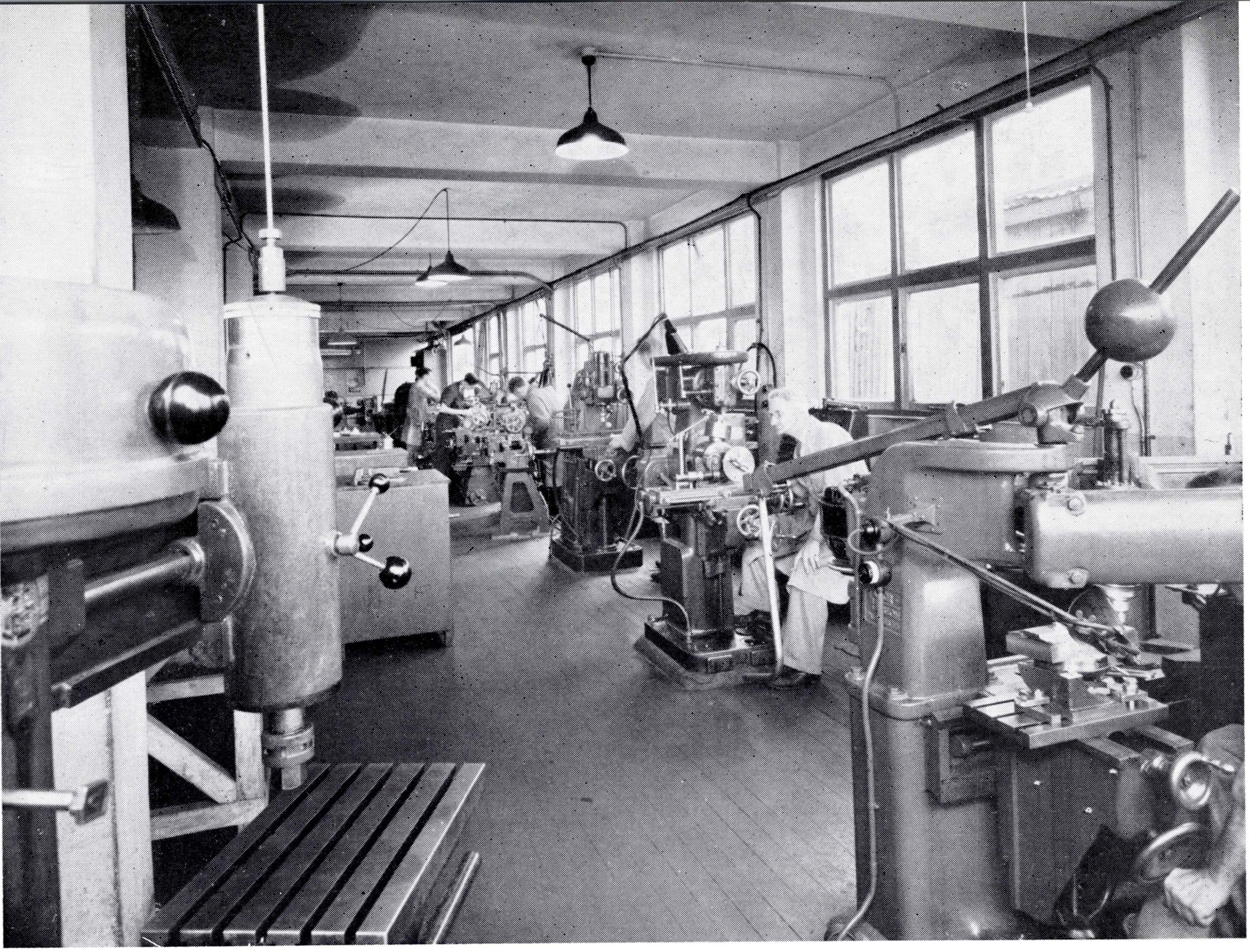
Chairman of Directors - - - - - Eric H. Nolan
Directors - - B. H. Edkins, R. H. Forder, H. L. Lewis
Financial Advisor - - - - E. D. Wilkinson, C.M.G.
General Manager - - - - - H. L. Lewis
Manager - - - - - - - V. A. Hetherington
Factory Manager - - - - - H. T. W. Nolan
Secretary - - - - - - - H. T. Lee

Staffed by over 250 New Zealanders, many with 15 to 20 years of service, and developed entirely by local capital, now £250,000, this group of manufacturers is an excellent example of enterprise, virile development and achievement by local industry.



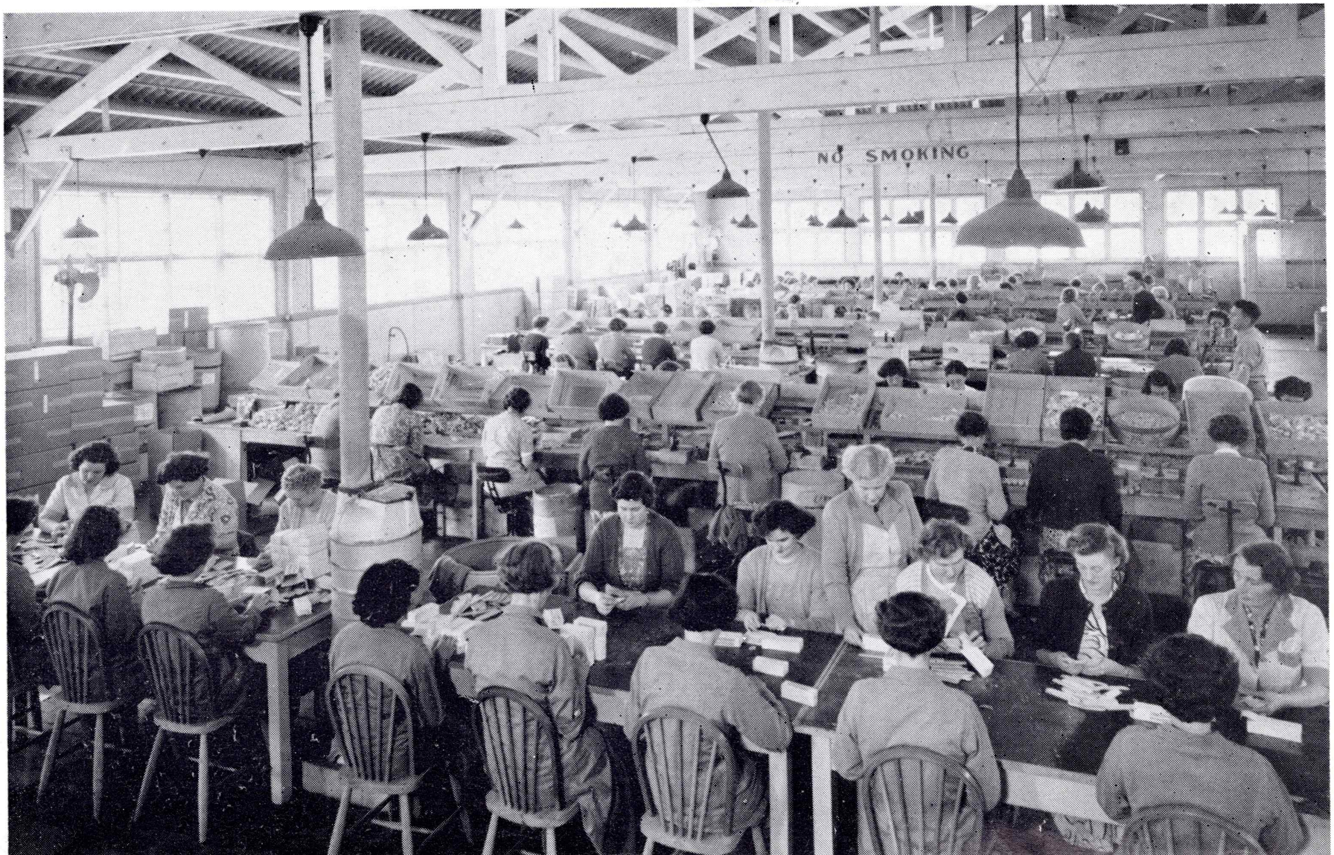
THE 650-TON COMPRESSION PRESS moulding plastic Radio Cabinets. On the right is electronic equipment for the pre-treatment of the thermo setting materials.

THE LARGEST INJECTION MOULDING MACHINE in New Zealand, which produces large Bowls, Buckets, Laundry Baskets, Dust Bins, Radio Cabinets, Crispers, etc.



A **SECTION OF THE TOOLROOM** of Custom Moulders (N.Z.) Ltd., where plastic moulds are constructed.

THE ASSEMBLY AND PACKING DEPARTMENT OF PLASTIC MOULDERS (N.Z.) LTD.



Founders of the Rubber Industry in New Zealand

REID NEW ZEALAND RUBBER MILLS LIMITED

666 Great South Road, Ellerslie, Auckland

Back in the early 1930s despite a world-wide depression, New Zealand was fast becoming one of the world's largest producers of dairy produce. Reticulation of electricity was spreading to the country, and in the drive for efficient and higher production milking machinery was receiving special attention. To start the milk flowing from the cow in the farmer's shed, one of the important factors is rubberware — inflations — and to keep it flowing — tubes and tubing.

These essential parts at this time were imported. No one thought of it otherwise, except for one man, Mr. G. C. W. Reid, technical salesman for an Australian company, who made periodic visits to this country. Mr. Reid had joined the industry in 1911 as a chemist, and had quickly realised that the only satisfactory way the consumer could get a first-class rubber product was through research and scientific formulation and testing of rubber compounds. He had progressed through the production and administrative sides of the business until he had reached the position which suited his talents best — technical sales.

When he suggested that rubber products could be made in New Zealand, he did not receive much support, but he had the confident belief that the rubber industry had a definite place in the economy of the country. In Wellington and Auckland he found little encouragement for his proposal, and it was not until his third attempt that he was in a position to launch a company. Nominal capital was £30,000, and by June, 1933, sufficient had been raised to start operations.

Rubber at 4d per lb.

The first ton of rubber purchased cost 4d. per lb. and a factory in the old railway carriage workshops at Penrose commenced turning out milking rubberware, despite the powerful opposition of established interests. In these early days, as it is today, highest emphasis was placed on quality. Mr. Reid tested his product in the laboratories and on specially selected farms, and before many years had passed a reputation was being built. For two years, without counting the hours, he canvassed farmers throughout the country. Where there was a dairy farm Mr. Reid went. After an agricultural show late at night and in teeming rain, he journeyed 18 miles leaving rubber samples and literature in farm letter boxes.

This was the beginning. At Reidrubber today the word 'inflation' has no connection with monetary terms — it defines a product which has been perfected over the years and has an established market not only in this country but throughout the world. Known as one of the world's best brands, it is exported to Australia and the United States.

A Softer Softball

But in Reid's Penrose plant inflations are but one name on a long list of 2000 odd products. The Company has progressed with the times. Linked with the famed B.F. Goodrich organisation of America and with twenty-five years of experience behind them, Reidrubber meet and surmount many problems — day to day problems, like the one posed by the Education Department: Can you produce a ball like a softball, only softer? The technicians at Reidrubber went to work on this. They had been told that in the schools the younger children were being hurt by the standard softball, and the Department wanted something with a little more resilience. From the factory today is produced the ball with the rubber casing — a soft softball.

The Perfumed Hot Water Bottle

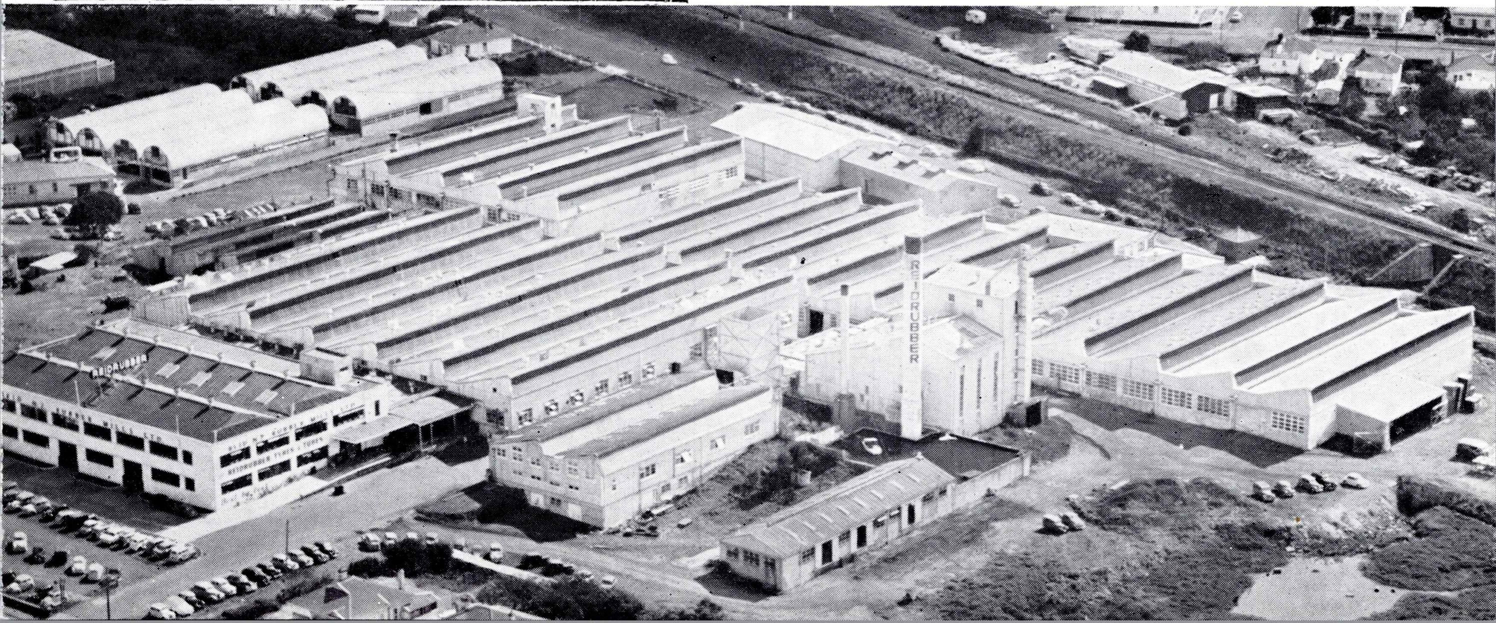
Hot water bottles, in variety and by the thousand, are an important product at Reidrubber. There is the luxury model with the raised surface to protect the user from his hot bottle. But the user, a fastidious person, did not like the smell of rubber and the chemists were asked to tackle this problem. The result, a perfume in the pigment, and everyone was happy.

Out of necessity has grown this vast range of products, but Reidrubber has to be sure that all the expensive research and equipment will be warranted in the end. The Sales Department contends that it would be rare indeed to find a household in New Zealand where some rubber product from the Company was not in use. There is the door mat, the multi-coloured bath mat, the dish drainer, the plug in the sink or hand basin, the wheel on junior's tractor, the garden hose, tyres for motor vehicles, and polyurethane foam, the plastic material with a thousand uses.

The production of tyres for motor vehicles is a story in itself, but before this major milestone in the history of the Company arrived many were the trials of Mr. Reid and his team. Of the original members five are still with the Company — three fellow directors, Messrs. A. M. Seaman (Chairman), F. W. L. Milne and R. B. Cranwell, and two employees, Mr. C. H. Denham (now in charge of General Rubberware Sales), and Mr. R. G. Mcsporran (Purchasing Officer).

As time went on through the 1930s, production spread from the specialised field of milking machine rubberware to a range of useful articles for the housewife, and these lines were soon paying dividends. Production became more complex and at this early stage in the history of the firm it is worth noting that work was being found for more and more of the unemployed.

REID NEW ZEALAND RUBBER MILLS, PENROSE, AUCKLAND. Photo Whites Aviation



Other businesses making fixtures and fittings grew with Reids, and there were savings in overseas exchange. Retread rubber for motor tyres was made, hosing of various kinds, sheet rubber, mats, hot water bottles, cycle tyres and tubes, battery boxes and specialised industrial products. More space was needed for the plant, and, in 1939, plans were laid to build a new factory on the Great South Road, about half a mile north of Penrose.

First Industry to be declared 'Essential'

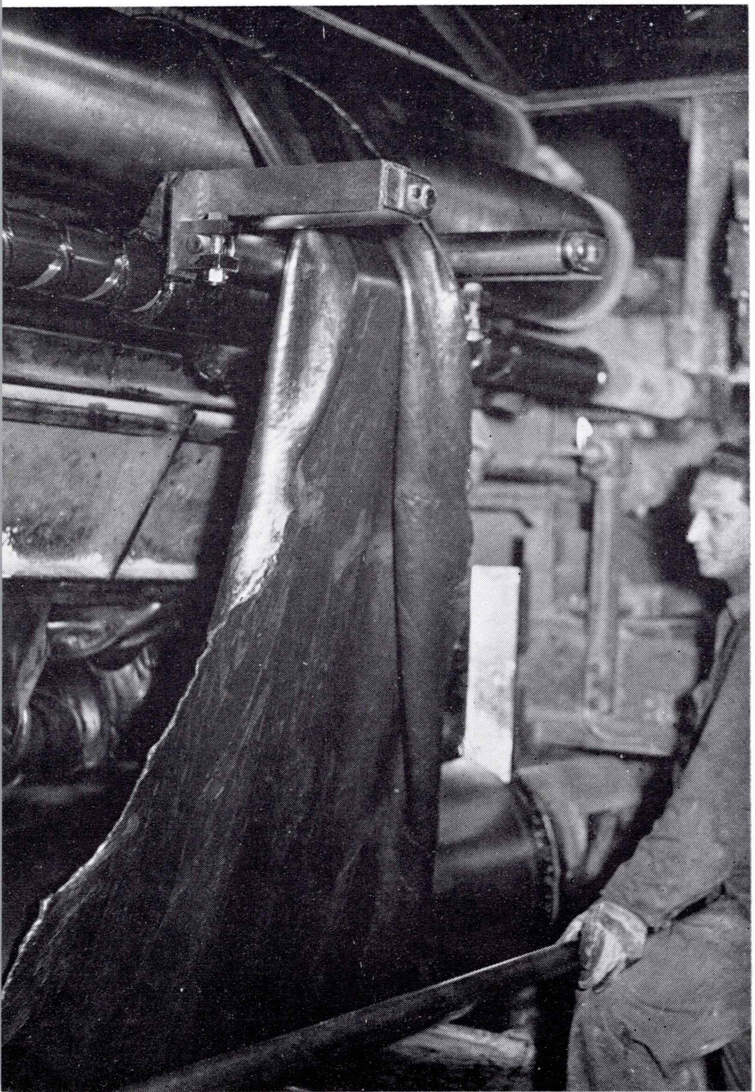
With the outbreak of World War II, many of the plans for future expansion had to be shelved, but the industry became the first to be declared essential under the emergency regulations and production was turned over to the war effort. Reidrubber established a notable record through these difficult times. Contracts were undertaken for all of the Armed Services and the various civil authorities. At the same time every effort was made to keep supplies of essential rubber goods flowing to the farm and the general public.

Raw rubber supplies were in short supply, and the necessity for conserving these led to the building by Reidrubber of a rubber reclaiming plant, completed in 1942. This saved thousands of tons of raw rubber and enabled essential transport and industries to keep going.

Goods at all Times — and in Generous Measure

Thousands of treads for Bren gun carriers were supplied, in addition to many other 'tools of victory' manufactured to designs and specifications demanding the highest durability. The ingenuity of the staff was taxed to the limit, equipment being built out of an amazing variety of scrap. Hundreds of new processes and rubber compounds had to be evolved. Reidrubber delivered the goods at all times and in generous measure.

A CLOSE-UP of one of the giant mixing mills.



Reidrubber teams up with B.F. Goodrich

The major rubber product not made by Reidrubber during those war years was motor tyres and tubes. This was put right in 1945 when the decision was made by the Government that New Zealand should have a tyre industry, and that there should be three competitive units, each fully supplied with technological data from reputable overseas companies. Reidrubber was one of the three companies granted a licence, and an association was formed with the B.F. Goodrich Company of America — one of the largest rubber companies in the world. Reidrubber, first in rubber in New Zealand, became associated with a company which has more than 200 historic firsts in the field of rubber.

B.F. Goodrich are manufacturing man-made rubber, chemicals, rubber goods and kindred products in modern plants in 25 towns of the United States and two in Canada. In addition, there are 12 associated manufacturing companies in different countries throughout the world. As one of these 12 overseas associates, all linked together in the International B.F. Goodrich Company, Reidrubber is directly contributing to, and receiving benefits from, this vigorous research organisation.

With the return to more normal conditions after the war and the release of the Company's new building, the problem had to be faced of shifting the plant and personnel from the leased Railway Workshop premises to the modern premises. This move was completed during 1947, and at no mean cost. In the meantime, Mr Reid had been to America to obtain first-hand knowledge of the B.F. Goodrich Company's operations, and to finalise plans for the manufacture of motor tyres and tubes in New Zealand. On Mr Reid's return, plans were laid for the building of the proposed tyre factory at the rear of the new general factory. This building was commenced in 1947 and, on March 11, 1949, the first motor tyre was produced to B.F. Goodrich specifications, in the presence of Mr W. G. Gulick, president of International B.F. Goodrich Company.

Rehoused and Reorganised in 300,000 sq. ft. Factory

The new factories with their administrative block, stores, engineering workshops, super-efficient boilerhouse, chilled water supply, medical unit, and canteens, have become a commanding landmark on Auckland's Great South Road. The working floor area is over 300,000 sq. ft. The total staff now employed is approximately 600.

The old Penrose Workshops, however, were not discarded; they were retained to be used as Raw Materials Stores, and today, what was once the total working floor area of the Reidrubber factory now, when full, holds only part of the raw material requirements for this huge organisation.

Reidrubber had now become one of the largest manufacturing organisations in the country. Its growth and development can be seen from the following paid-up capital over the years:—1933, £12,000; 1934, £15,500; 1935, £16,300; 1936, £20,000; 1937, £29,000; 1938, £45,000; 1939, £60,000; 1940, £90,000; 1941, £150,000; 1942, £150,000; 1943, £200,000; 1944, £200,000; 1945, £200,000; 1946, £300,000; 1947, £720,000; 1948, £720,000; 1949, £1,000,000.

During 1950, the main teething troubles of the Tyre Factory were overcome, and the output steadily increased. As ever, quality was made the first consideration and, as a result, the product was very well received. The demand for tyres during that year was far in excess of the factory's capacity to supply.

The General Factory had also recovered from its upheaval on moving from Penrose. The application of time study and work study methods assisted in the general improvement and efficiency.

Mr Reid Steps Down as Managing Director

The Board of Directors, which had been joined by Mr F. D. Pidgeon in 1947, now had added to their ranks Mr S. Howard Hunter, who replaced Mr J. A. Martin on his resignation. However, Mr Reid, feeling the strain of his years as Managing Director, decided he should shed some of the load, and in December, 1956, he relinquished this position and remained on the Board in an advisory capacity. Mr J. R. Middleton, who became the Company's secretary in 1946 and, in 1953, Assistant Manager, was appointed to the position of General

Manager on January 1, 1957.

It is interesting to note at this point the growth in the registration of motor vehicles. In 1944, the number of vehicles registered was 300,000; in 1950, this had jumped to 423,000; and in 1953 over 560,000 vehicles were registered, while today registrations are in excess of 750,000, a complete justification of the decision to have three competitive units in the country producing motor tyres and tubes.

Nylon in Truck Tyres for the First Time

Reidrubber's association with the B.F. Goodrich Company enabled the Company to introduce nylon fabric into truck tyres in 1953. This was the first time nylon had been used for this purpose in New Zealand, either by local manufacture, or by importation. The particular feature is known as "Nylon Shock Shield" which does much to increase the life of these tyres because of its greater strength and bruise resistance.

Another important innovation introduced into the passenger tyre range was the 'Centipede Tread': over 10,000 very small grip blocks are cut across the tread for the tyre's whole circumference. This is estimated to give up to 30 per cent greater grip on icy or wet roads and was another important step towards safer motoring.

The year 1951 also saw the birth of plastic manufacture in Reidrubber: P.V.C. and Polythene plastic hose and piping production was undertaken. This was well received, giving very satisfactory results.

This year certainly seems to have been the turning point in the Company's fortunes, and the net profit of nearly £69,000 formed the spring-board to the successes of the following years.

The 21st Year and the Tubeless Tyre

In 1954, the Company came of age and celebrated the fact by having its most successful year since its inception. In March, it was announced that Reidrubber would be marketing the famous 'Lifesaver' tubeless tyre with its self-sealing puncture qualities. This remarkable tyre was invented in 1947 by the B.F. Goodrich Company.

A record number of tyres were produced in 1954, and nearly a million feet of plastic hosings. This, combined with the increased demand for general rubber products, produced a net profit of £124,579. To mark the completion of 21 years of operations, in addition to an ordinary dividend of 6 per cent, a 21st Anniversary bonus of 2 per cent was granted to the ordinary shareholders, making a total of 8 per cent for the year — a welcome anniversary present to the hundreds of New Zealand shareholders supporting New Zealand industry.

The year 1955 saw the introduction of the new type tubeless tyre called the 'Safetyliner' and its adoption as original equipment on many of the new cars assembled in New Zealand.

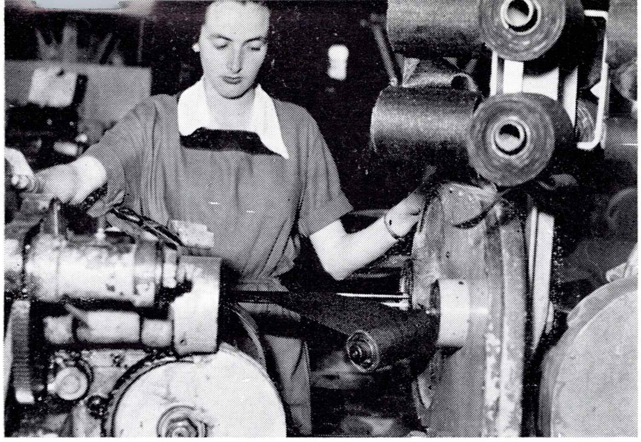
Plastic (Polyurethane) Foam — Wonder Material

The Company was still planning extensions to its factories, and the development of new lines. It had been the Company's intention for many years to produce some kind of rubber or plastic foam. After examining all that was available in the world at that time, it was decided, in late 1955, that polyurethane foam, as patented by the Bayer Company of Germany, would be the most likely successor to foamed rubber. Negotiations were put in hand, resulting in the signing of an agreement with the Bayer organisation, enabling the Company to be the first producers in New Zealand of Polyurethane foam.

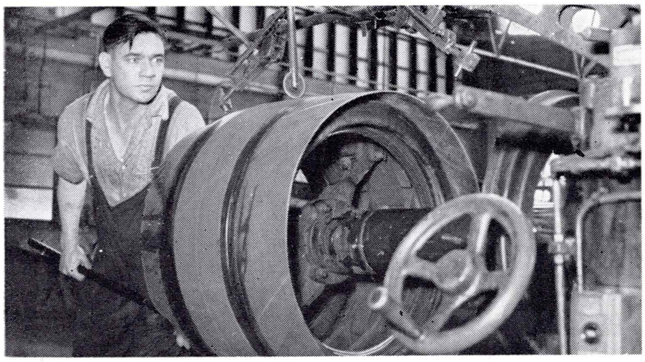
Mr Reid made a world tour during 1956, visiting nearly every country where the new material was being sold. This trip enabled the Company to obtain first-hand information on the application of this wonder material. He went to Germany, visited the Bayer plant, and spent some time in the research laboratory discussing the plant and processes necessary for production. One of the Company's chemists was sent to Germany to learn the chemical processes involved, and to obtain practical experience in the operation of the various machines. He, too, visited London and America to ensure that he had the maximum amount of information necessary to produce a satisfactory product. The very latest machines were purchased, producing, for the first time, polyurethane foam in a width of 54 inches.

As well as being extensively used in upholstery, many

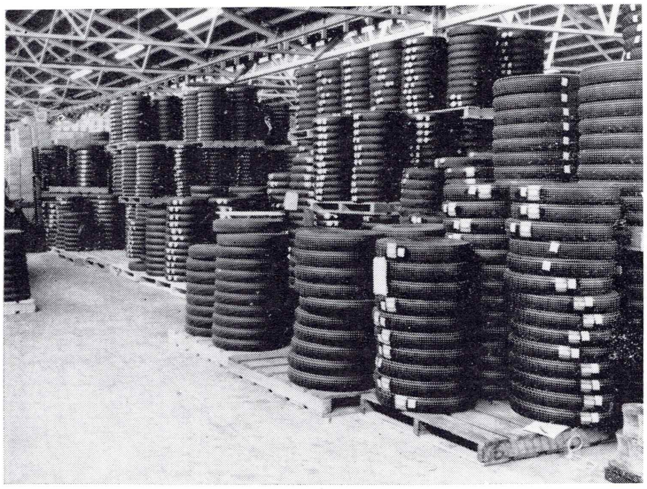
(Continued over)



ONE OF THE STEPS IN MAKING BICYCLE TYRES: Applying the cord fabric to the beadwire.

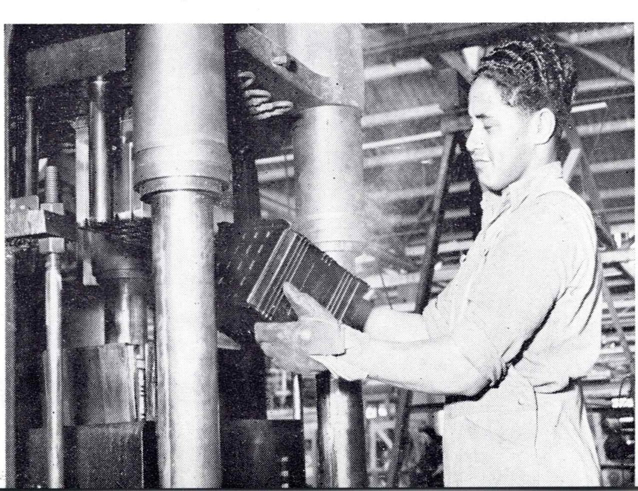


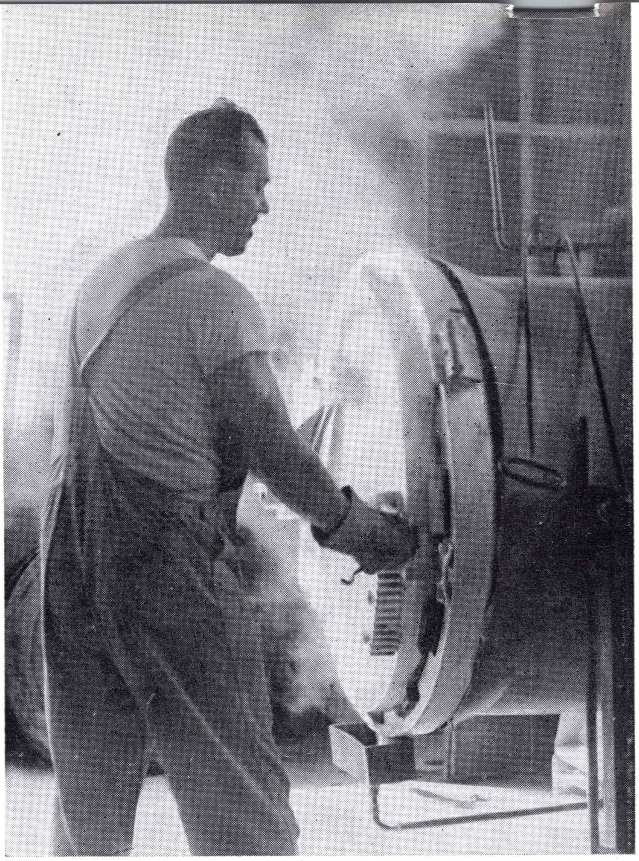
TYRE BUILDING: Spinning the body fabric on a rotating drum.



TYRES OF ALL SIZES stacked in the store ready for despatch.

A BATTERY CASE being removed from the mould.





A LARGE VULCANISER used in the manufacture of milk tubes, etc.

thousands of yards of this material have already been sold as carpet underlay. 'Reidoprene' was not the only innovation for 1956, for, on the general side, we saw the development of many new lines: new types of moulded milking rubberware; 'wharf buffers' to take the impact of heavy ships, especially developed and designed for the New Plymouth Wharf, and subsequently adopted for many other wharfs; 'Zero Pressure' wheels for motor mowers; new types of rubber gasketing for refrigerators; and the use of oil-resisting rubbers in rubber soles and heels for industrial footwear.

New machines and methods have been introduced combining the latest technological advances with their suitability for New Zealand conditions. The close of 1956 saw a new Tyre Factory Extension completed and a new building to house the Fabrication Section of the Plastic Foam project.

Modern equipment is on order, in line with the policy of systematically replacing obsolete plant. Work study methods are helping to make an efficient Company even more efficient. Each year, the number of long-service employees increases and just on 100 employees have completed more than 10 years' service.

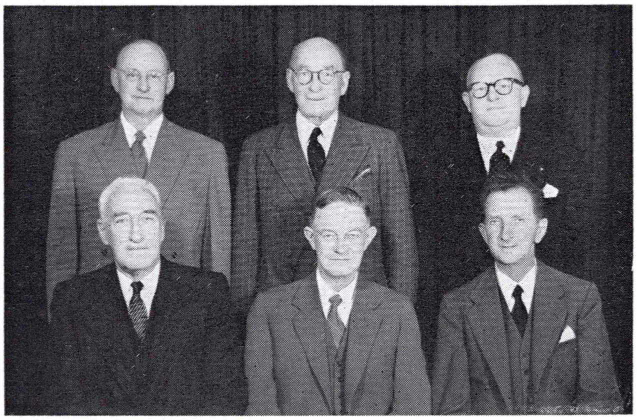
There can be few companies in New Zealand having such happy relationships between all sections of the Company's work force and management. Much of this success is undoubtedly due to the activities of the Social Club. The Company has also been fortunate in working with elected union executives, who have the activities of the Social Club in engendering a friendly atmosphere and a common interest amongst the members of the twelve different Unions employed by the Company. One of the records of which both the company and the Rubber Worker's Union are justifiably proud is that never in 25 years has there been a strike or an unauthorised stop-work meeting. This happy position has developed from the attitude of a negotiating, working partnership, from the calibre of the Union Executives elected by the workers over the years (many of them now hold responsible supervisory positions in the factory), and the determination of the management to be readily accessible to the workers' representatives at any time to hear grievances, or suggestions, regarding improvements in conditions, methods, or operations.

Silver Jubilee Year — 1959

The first rubber products, made in New Zealand, were manufactured and marketed in 1934 by Reidrubber, with the employment of a dozen men and the facilities provided by £12,000 of capital subscribed by a handful of shareholders in the 'slump'.

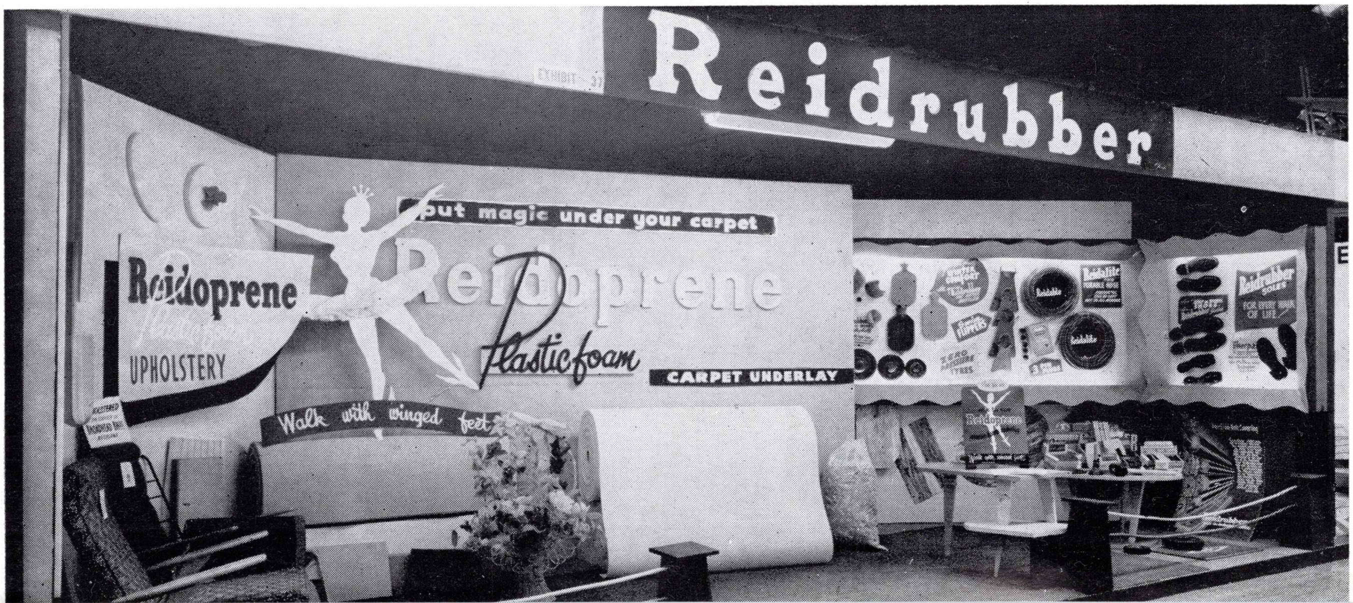
In 1959, the company will be utilising Shareholders' Funds and Mortgage Finance totalling over £1,600,000 and providing employment for a steadily growing 'family' of over 600 men and women.

Admittedly, the past quarter-century has been an era of unprecedented growth and development of secondary industry in the Dominion, but nevertheless Reidrubber's record and achievement stands out as a tribute to the foresight and determination of the pioneeres who founded this important strategic industry and guided its fortunes to the enviable position it now occupies in the economy of the Dominion.



THE BOARD OF DIRECTORS 1957—Back: Mr F. D. Pidgeon (1947), Mr. R. B. Cranwell (1953), Mr S. Howard Hunter (1950); front: Mr G. C. W. Reid (1953), Mr A. M. Seaman (1933) (chairman), Mr F. W. L. Milne (1950).

ONE OF REIDRUBBER'S NEWEST PRODUCTS — REIDOPRENE PLASTIC FOAM: A display at the Wellington Show, 1957.



SKELLERUP INDUSTRIES LTD.

173 Cashel Street, Christchurch

- LATEX RUBBER CO.
- MARATHON RUBBER FOOTWEAR LTD.
- EMPIRE RUBBER MILLS LTD.
- SKELLERUP FOAM LATEX LTD.
- ATLAS RUBBER CO. LTD.
- SKELLERUP PLASTICS LTD.
- PARA RUBBER CO. LTD.
- COTTON BROS. LTD.
- DOMINION SALT LTD.

Skellerup Industries Ltd. is the parent Company of the nine separate Companies that now form New Zealand's largest rubber, plastic and clothing organisation. The beginning of the Companies forming the group dates back to 1910, when George Waldermar Skellerup commenced the Para Rubber Co. Ltd., now the elder statesman of the Skellerup Organization.

Mr. Skellerup passed on in 1955, after setting the progressive pattern of the many companies that today go forward as a true testimony to his vision, energy and faith in the manufacturing and internal selling to an expanding New Zealand economy.

These pages give a concise account of the group of Companies which today are operating to full capacity, and finding ready markets for their products and services.

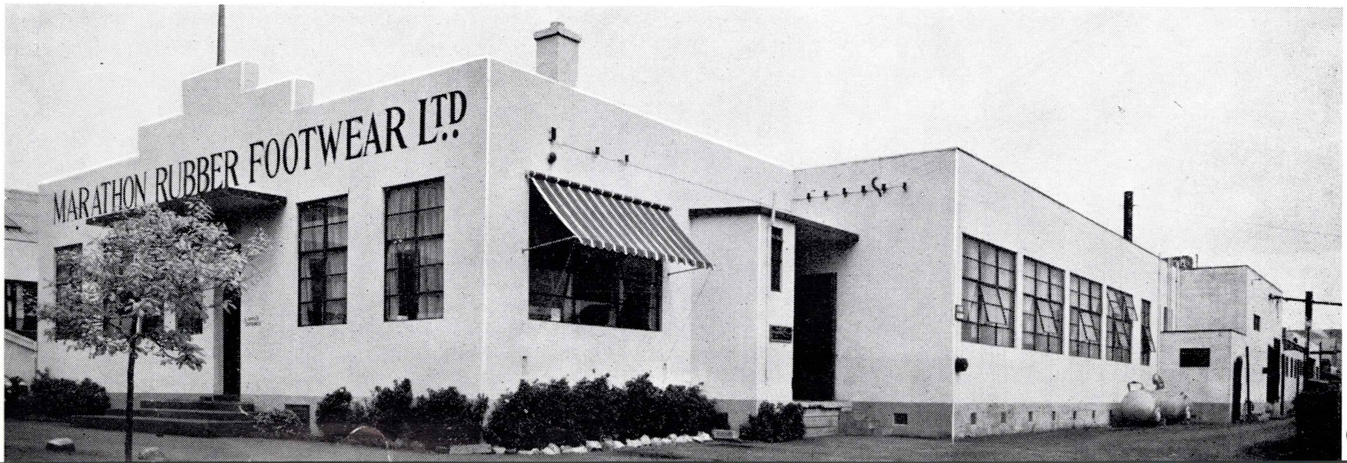
MARATHON RUBBER FOOTWEAR LTD.

Cumnor Terrace, Woolston, Christchurch

The photograph below is of the main office block, Woolston, Christchurch, and instances the congenial and open facade of the Company's operations. Behind this office block exists the vast expanse of factory wherein are manufactured the following nationally-known products:—
"Marathon" Gumboots, and Tennis Shoes, etc.,
"Foamtread" Casual footwear and slippers;
and a range of associated products.

The enterprise was formed in 1939, later to fully serve the national interests in time of war. It is the only rubber factory in the Dominion creating a full selection of all types of rubber footwear for industrial, farming, sporting and general purposes. Production is normally well in excess of 20,000 pairs of footwear a week.

Of interest is that Marathon is associated with Ro-Search Inc. of U.S.A. for the local creation of the ever increasingly popular "Foamtread" slippers and casual shoes.



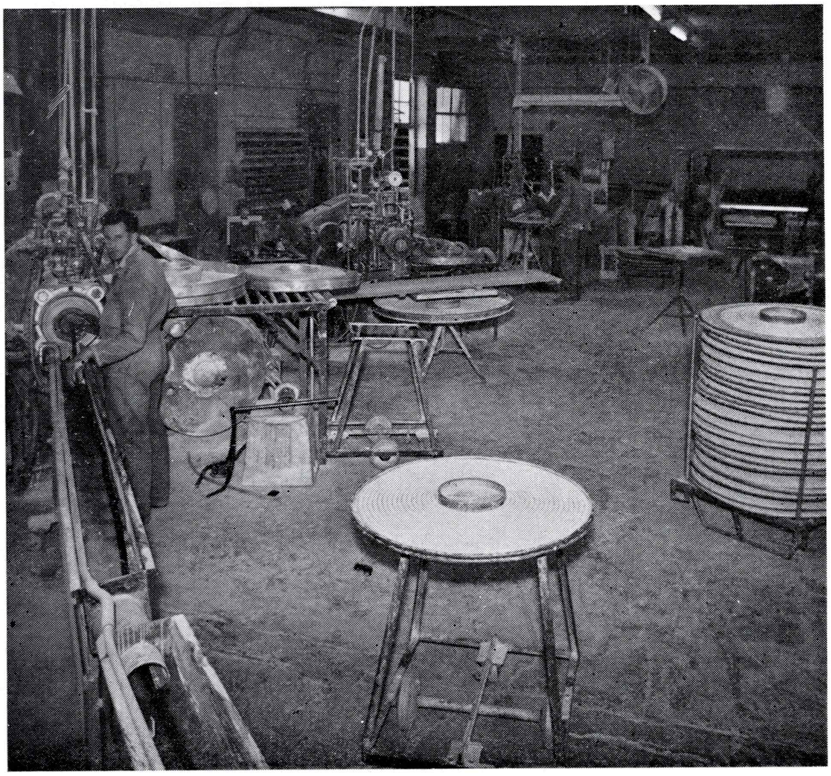
SKELLERUP INDUSTRIES LTD.

EMPIRE RUBBER MILLS LTD. Cumnor Terrace, Woolston, Christchurch

This thriving Company was formed in 1938 and today processes and forms rubber for the manufacture of a wide range of "Empire" brand Industrial Rubberware, "Empire", "Flag" and "Anchor" brand Milking Machine Rubberware; and rubber parts for refrigerators, washing machines and vacuum cleaners, etc.

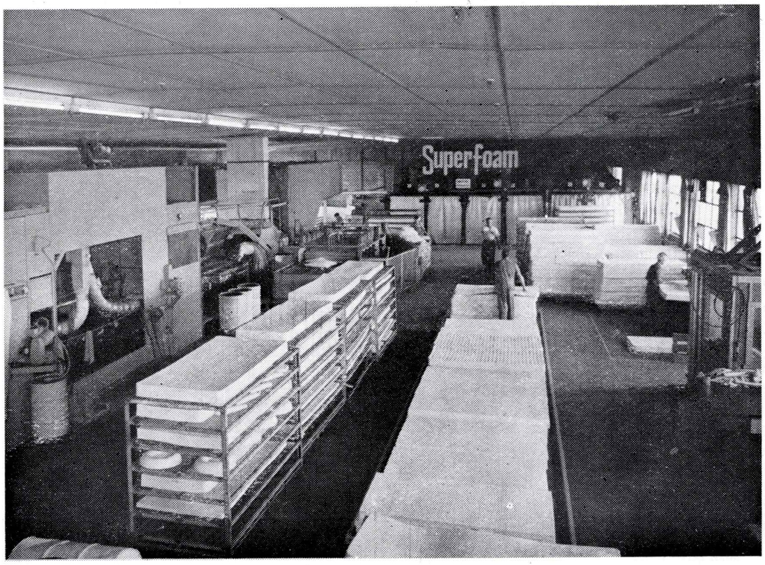
In point of fact, Empire Rubber Mills Ltd. is now rightly termed "The Manufacturer for the Manufacturers", and is without doubt the most versatile rubber manufacturing company in New Zealand, as an inspection of the plant in operation and a view of the wide range of products so clearly and convincingly show.

The Head Office is at Christchurch and factories operate at Christchurch and Auckland.



The photograph shows a view of the extruder room at Empire Rubber Mills Ltd., Christchurch, during the actual manufacture of rubber tubing.

SKELLERUP FOAM LATEX LTD. Marshall Street, Woolston, Christchurch



Under the wing of this thriving Company are the "Superfoam by Skellerup" products of wide esteem and public acceptance — "Superfoam by Skellerup" Mattresses, Pillows and upholstered Cushions in foamed latex in the furnishing trade for general use.

Here again, the head office and factory are at Christchurch, established in 1953 following the destruction by fire of the Foam Division of the Latex Rubber Co. Ltd., at Waikuku, Canterbury, in December 1952.

The scene on the left covers only a portion of the production section of Skellerup Foam Latex Ltd., and shows "Superfoam by Skellerup" Mattresses and Cushions after leaving the curing ovens.

LATEX RUBBER CO. LTD. 152, High Street, Christchurch

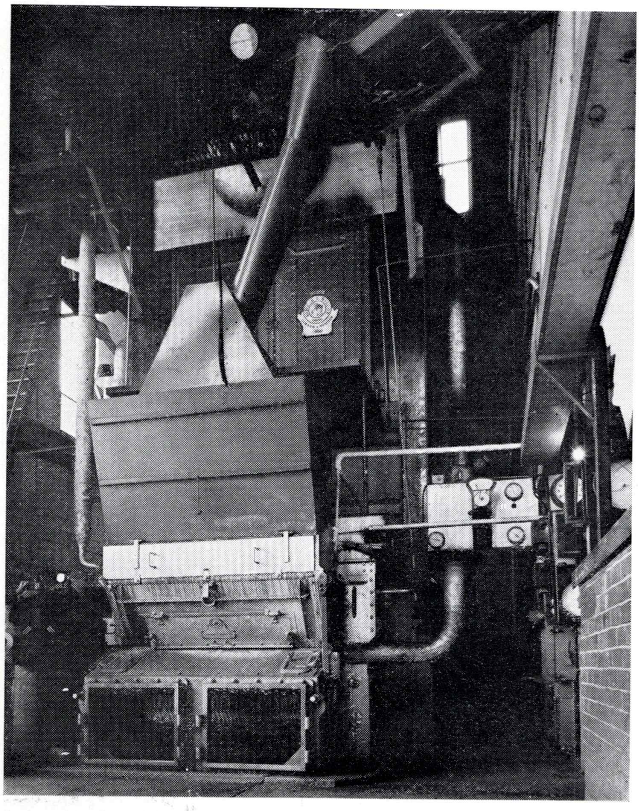
In the care of this organisation is the manufacture of a wide range and selection of clothing and other made-up rubber and rubberised products.

The factory today is claimed as the most modern and up-to-date rainwear and waterproof clothing business in New Zealand and, in particular, makes under license the famous English "Alligator" Rainwear. It also produces a wide variety of moulded goods, mats and matting, including "Enzide", "ITS" heels, Non-burn hot-water bottles, etc.

Of interest is that the Latex Rubber Company originally founded the "Superfoam by Skellerup" foamed latex industry in this country.

The view on the right gives some idea of the expanse of floor space, and shows a section of the coat-making workroom in operation.

ATLAS RUBBER CO. LTD. 173, Cashel Street, Christchurch



Here again is a young Company which also served New Zealand fully in the last war, as it enabled the country to carry on with the then drastic curtailment of supplies of natural rubber. The Company actually commenced operations in 1942—a "dark" war year—and immediately produced a high-grade alkali-reclaimed rubber. Although raw rubber is now normally in reasonable supply, reclaim by this plant has many uses, particularly as the reclaimed rubber is of a high grade and refined type.

The photograph shows one of the three high-capacity boilers at the Atlas Works. The complete boiler installation is one of the most modern possible, and is capable of maintaining maximum steam supplies to all the Skellerup group of factories in the Woolston area in south-east Christchurch.

SKELLERUP PLASTIC PRODUCTS LTD.

Woolston, Christchurch

This latest subsidiary Company was formed in early 1958 and will manufacture a wide range of plastic products.

PARA RUBBER CO. LTD. Christchurch and Branches

This business has premises in 19 main towns in New Zealand and principally handles the retail sale of rubber products and allied consumer goods. It is the largest retail distributor of such goods and services in the Dominion. The head office is at Christchurch and the branches are as follows:—

Auckland (three shops), Pukekohe, Hamilton, Whakatane, Gisborne, Hawera, Dannevirke, Palmerston North, Masterton, Wellington, Christchurch (two shops), Ashburton, Timaru, Oamaru, Dunedin and Invercargill.

PARA
PARA FOR RUBBER GOODS

The photograph is a night panorama of display windows at the Christchurch shop, on the corner of Cashel and Manchester Streets.

COTTON BROS. LTD. 136-138, Lichfield Street, Christchurch

This is the heart of the Wholesale Division of Skellerup Industries Ltd., and today is the major wholesale distributor of rubber requisites for New Zealand.

The Company is most firmly established, with head office in Christchurch and 11 branches and depots throughout the country for the serving of an ever-increasing clientele in every city, town, and district. The branches and depots exist at Auckland, Hamilton, Whangarei, New Plymouth, Wanganui, Hastings, Wellington, Nelson, Christchurch, Dunedin and Invercargill. Cotton Bros. Ltd. distribute famous "Brand Names by Skellerup" as follows:—
Superfoam, Alligator, Marathon,
Date-Maker, Rain Fashion, Enzide,
Sleeping Beauty, Pacific,
Empire, Foamtread, Midas and Latex;
and all other classes of Industrial, Mechanical and Household Rubber requisites.

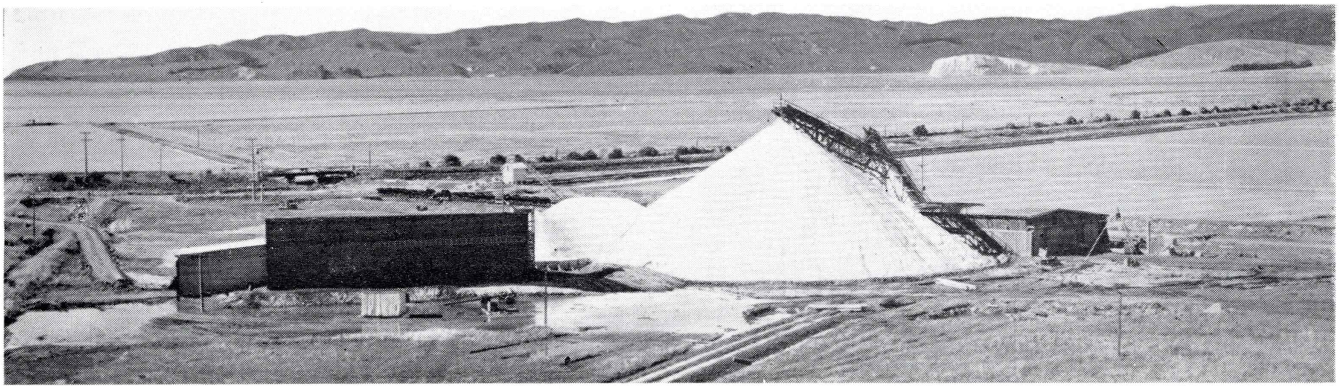
DOMINION SALT LTD. 173, Cashel Street, Christchurch

The birth of this Company was in 1943. The then Minister of Industries and Commerce (the late Hon. D. G. Sullivan) was so gravely perturbed at the effect of the war-time salt shortages on both health and industry that he approached the late Mr. G. W. Skellerup regarding the construction of a Solar Salt Works at Lake Grassmere, Marlborough, to ensure adequate supplies of this vital chemical.

The construction of the works commenced in that year. The preliminary work of building over 30 miles of banks, a sea intake, roading, power lines, housing, and crystallizing ponds was a tremendous undertaking.

Today, Skellerup Industries Ltd. and the New Zealand Government have a joint interest in the Grassmere works which, in 1955, harvested some 3,300 tons of salt, whilst in 1957 the tonnage exceeded 11,000. Lake Grassmere salt is above 99.7% purity—very high by world standards. When the works are fully developed, it is expected that 50,000 tons of salt will be produced annually.

The expansive photograph below shows not only a view of the vast area used in the venture, but also 15,000 tons of "Pacific" Solar Salt ready for bagging and despatch.



JOSEPH LUCAS (N.Z.) LTD.

Serving the Automotive World . . .

JOSEPH LUCAS (N.Z.) LIMITED

HEAD OFFICE: Broadway, Newmarket, Auckland

FACTORY: Church Street, Te Papapa, Auckland

The Lucas organisation, like many other large concerns, began business in a small way. It was founded in 1872 by Mr. Joseph Lucas who formed a private partnership with his son, Mr Harry Lucas, and traded under the title, Joseph Lucas & Son. One of the first products of their small workshop in Little King Street, Birmingham, was a ship's lamp christened the "Tom Bowling" after the old sea song very popular at that time.

When the bicycle, and later the motor-car, began to appear on the roads towards the end of the century, Lucas commenced making vehicle lamps. The first models burned oil, and later acetylene was used. By the beginning of the century the Lucas company was a sizeable concern with over 200 employees. As motoring became an accepted mode of transport, Lucas introduced a range of motor-car and motor-cycle accessories.

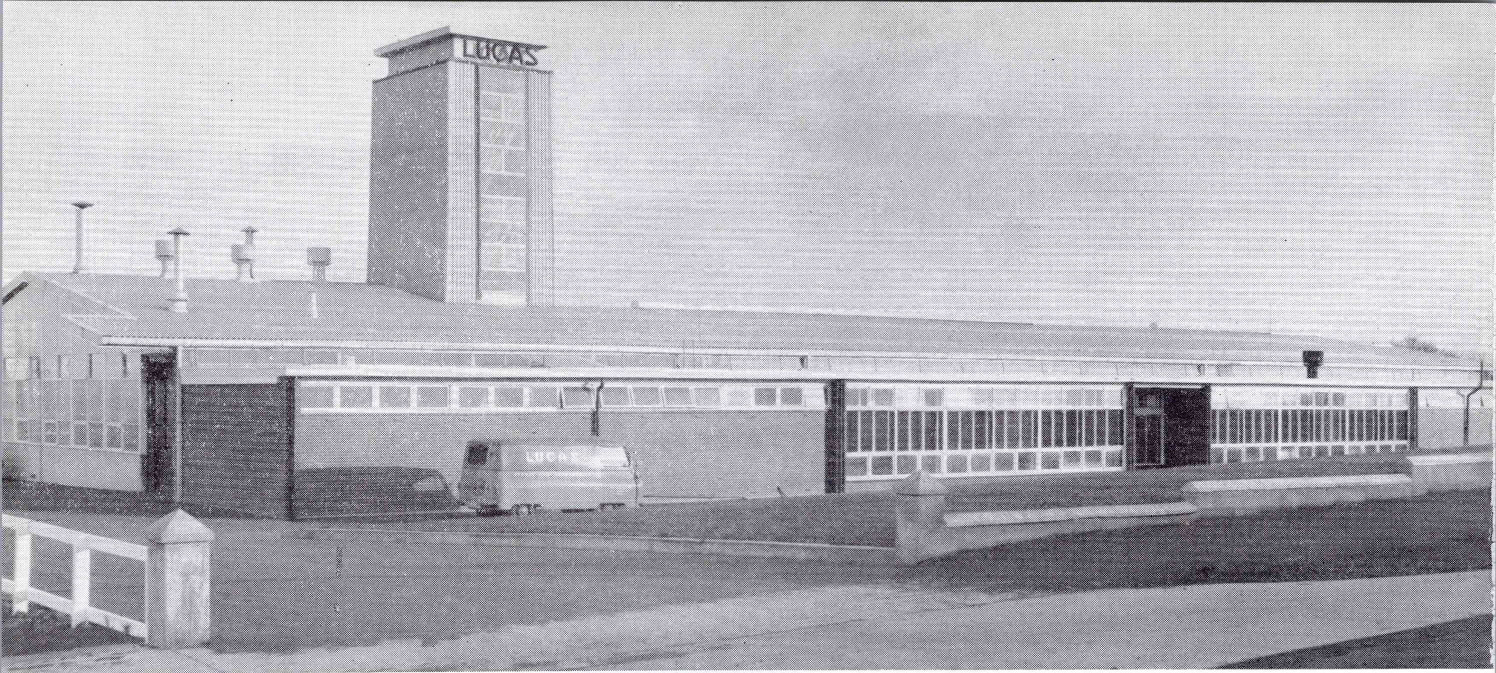
During the first world war, the resources of the company, now at larger premises in Great King Street, were placed at the disposal of the Government. In 1916, Lucas acquired Thomson-Bennett Magnetos Ltd, marking the first important step in the development of automotive electrical equipment. This was the first of a number of companies to join the Lucas organisation. Later members of the group include C. A. Vandervell & Co., and Rotax Ltd (motor accessories), C.A.V. Ltd (fuel systems and pumps), and Girling Ltd (hydraulic braking systems).

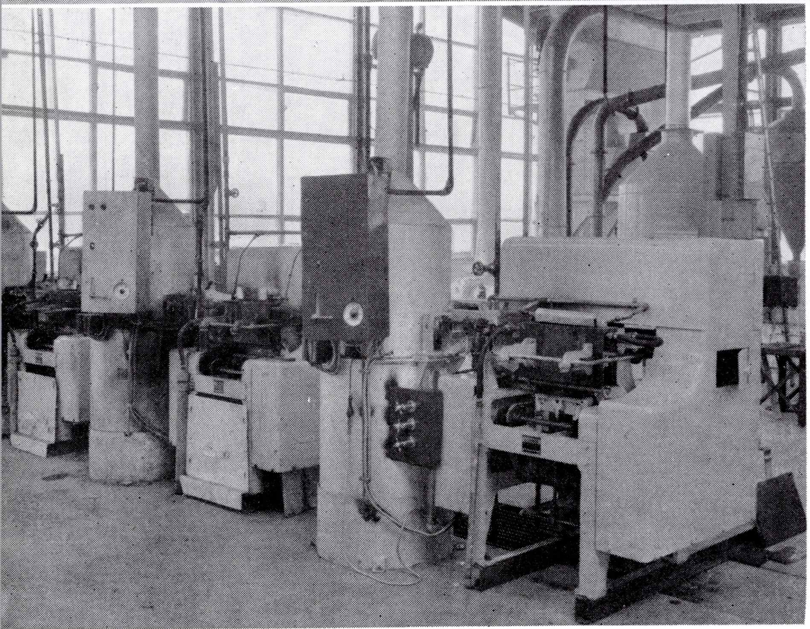
Expansion of the organisation together with a steadily increasing number of products meant a number of new plants in Great Britain, and the opening of active overseas manufacturing and sales organisations in U.S.A., Canada, Australia, India, South Africa and New Zealand.

Joseph Lucas (N.Z.) Ltd commenced operation in 1936 with the assembly of batteries from imported U.K. parts.

During the second world war, the Lucas group, now a world-wide organisation employing over 40,000 people, further added to its already impressive record of service with the manufacture, not only of standard lighting and ignition sets for military vehicles, but with new projects such as components for tank and aircraft gun turrets, aerial cameras, primers and fuses for artillery shells, bomb release mechanisms, and, last but by no means least, top-secret work on the new gas turbine or "jet" engine.

Above: JOSEPH LUCAS (N.Z.) LTD factory and office building at Newmarket, opened in 1948.





AUTOMATIC CAST AND CLIP MOULDING MACHINES for producing the antimonial lead grid of the battery plate.

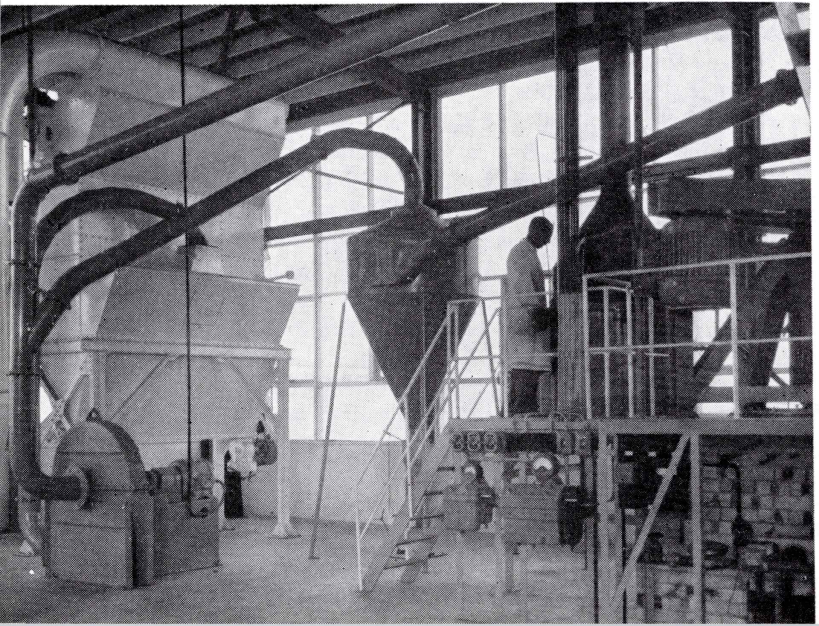
THE NEW LUCAS FACTORY AT AUCKLAND, completed in 1958, New Zealand's newest and most up-to-date Battery Factory.

The war had curtailed plans for the opening of a battery manufacturing plant in New Zealand, but in 1948, the Newmarket factory commenced production of a full range of Lucas Batteries. The ever-increasing demand for Lucas Batteries over the past 10 years has placed a heavy load on the facilities at the Newmarket plant.

This demand, together with new manufacturing techniques and developments in battery production, influenced the company to build an entirely new factory. This policy ensures that Lucas products will include every worthwhile development in modern battery manufacture. The company's efforts are concentrated on improving the breed, and the batteries of today ensure longer life, and greater starting power to promote the increasing efficiency of the modern car.

The new building — New Zealand's most up-to-date battery factory — was completed this year. The factory is situated on a fine new site at Church Street, Te Papapa, Auckland.

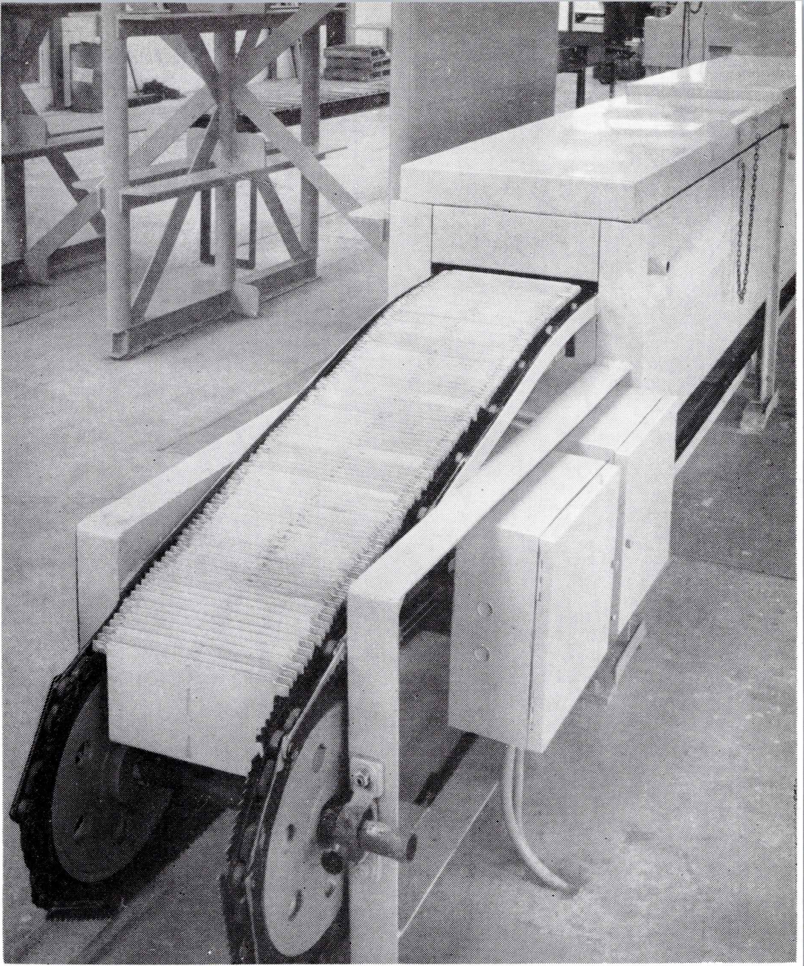
The illustrations show the new Lucas plant and some of the processes involved in battery manufacture. The four floors in the tower contain equipment which handles the manufacture of the active plate material. Raw



THE MASSIVE FILTER EQUIPMENT AND PART OF THE LEAD OXIDE PLANT installed in the Te Papapa factory. This Visco Filter ensures that the factory building and machinery are kept completely dust-free.

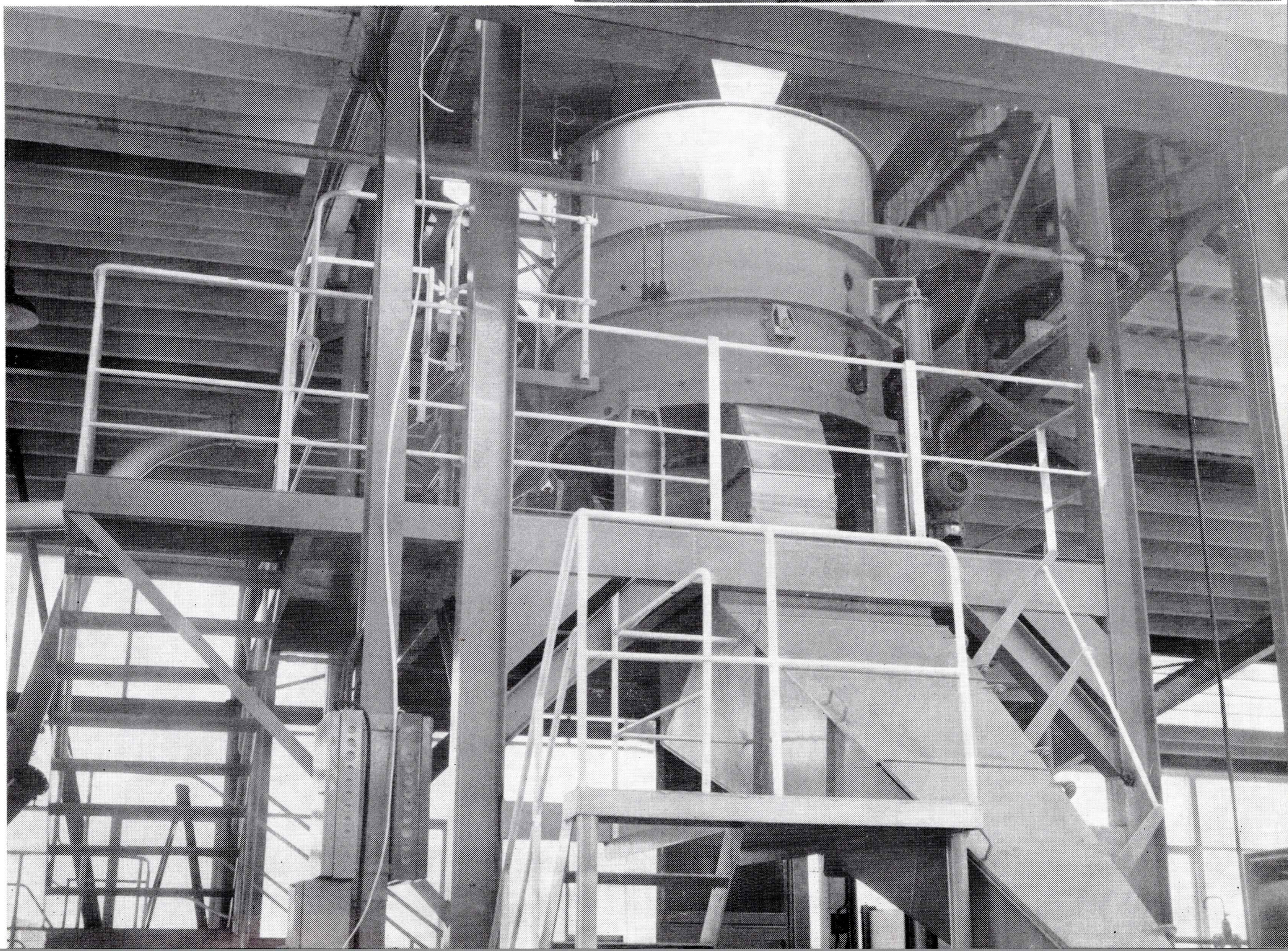
materials are fed to the top floor of the tower and then under gravity feed are processed down through the four floors to feed the main production line. This flowline manufacture is an essential feature of the modern production plant, and assemblies pass through all stages on roller conveyor tracks, right through to the final product.

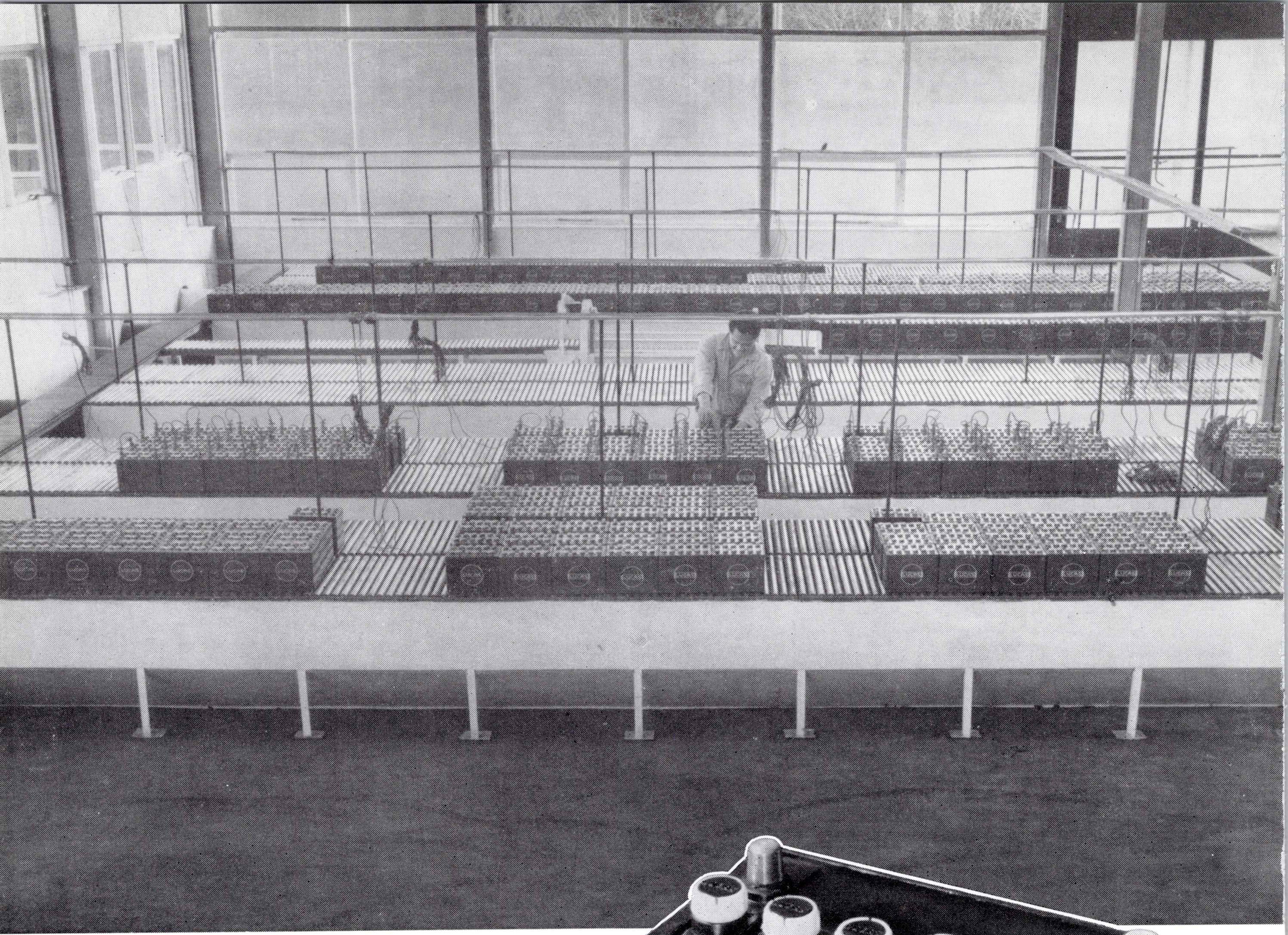
The Lucas team of research engineers and industrial chemists are always at work to improve the standard of Lucas products. Their job is not only to see that raw materials entering the works are of the required standard, but also to improve these existing standards. Com-



SPECIAL TEMPERATURE CONTROLLED DRYING OVEN, through which battery plates are passed after being pasted with active material. Plates are in pairs and remain so during the whole process until assembled into the finished battery.

PASTE MIXER AND DISPENSER installed on 1st Floor of Factory Tower.





FINISHED BATTERIES in the final process of acid filling and charging.

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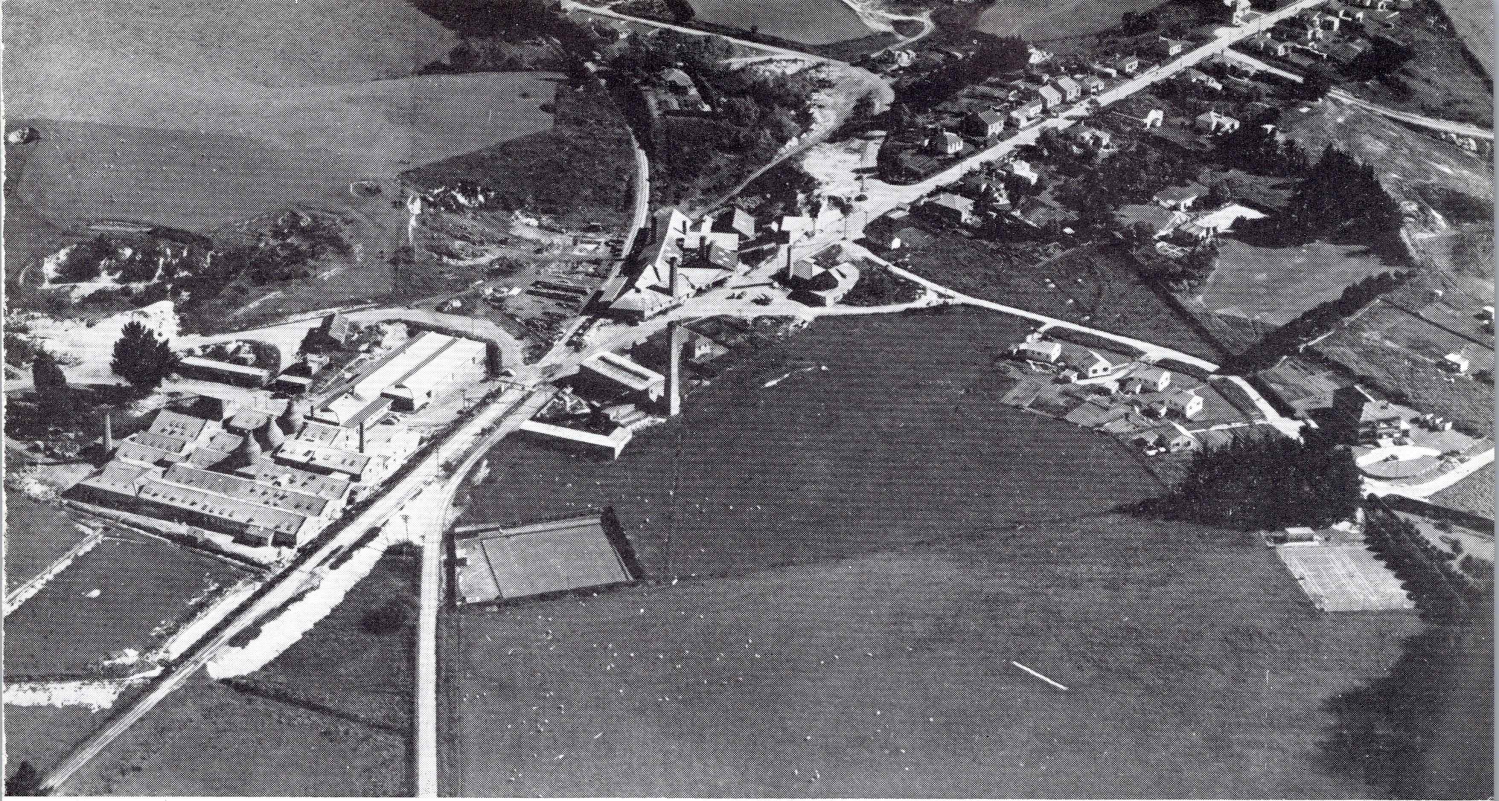
prehensive mechanical and electrical tests are always being made as new materials and processes are thoroughly tried out.

This continual research and development keeps Lucas up-to-date with the latest techniques and production methods known to the industry. The manufacture of Lucas Batteries is based on over 40 years' experience and is continually being reviewed and improved to meet the exacting needs of modern transport.

JOSEPH LUCAS (N.Z.) LIMITED

THE FINAL PRODUCT—
the new de luxe Lucas battery of a most advanced and modern design.



LARGEST OF THE McSKIMMING FACTORIES IS AT BENHAR, NEAR BALCLUTHA, OTAGO. This view shows the pottery and the settlement which has grown around it. Photo: Owen Hurst.

N.Z.'s only manufacturer of white sanitary earthenware

McSKIMMING INDUSTRIES LIMITED

40 Jetty Street, Dunedin

THE WAREHOUSE AT BENHAR: Principal products are bathroom basins and closet pans, but fireclay urinals, laboratory sinks and other lines are in steady production. Photo: Campbell Photography.

HERE A WORKMAN is putting the finishing touches to a mould of a wash-hand basin.

Photo: Mobile Press Pictures.

In Otago-Southland the clay industry was well established by the 1860s. Accurate records are lacking of the actual dates of establishment of the companies which later formed the present group of McSkimming Industries Ltd., but well before the end of the last century three pioneer families were well settled in the industry — the McSkimming family in South Otago, the Todd family in Invercargill, and the Lambert family in Dunedin. In 1916-17, the interests of these three families were amalgamated by the registration of three private companies, McSkimming & Son Ltd., Todd & Sons Ltd., and Lambert Bros. Ltd., with similar shareholdings. At the same time, the Benhar Coal Co. Ltd. was registered, under the same control, to take over the coal mine at Benhar which had been operated for many years by the McSkimming family. Later, these four companies jointly took over Abbotsford Tileries Ltd., and also the Homebush Brick & Coal Co. Ltd., a concern with a factory at Glentunnel which had been founded originally by the Deans family, one of Canterbury's most noted pioneers. Two other ventures, the Black Lion Coal Co. Ltd., and the Glen Afton Potteries were taken over but later sold. The group also at one time operated its own insurance office under the name of the Pipemakers Accident Insurance Co.

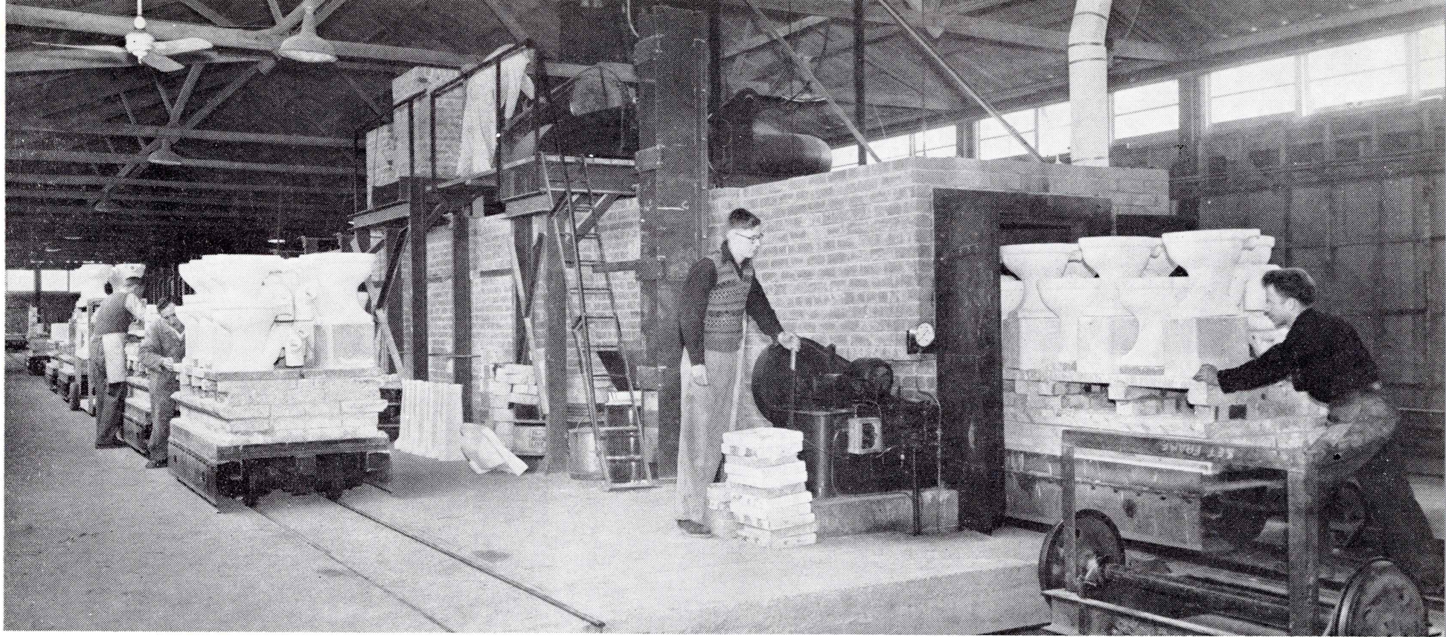
This group of private companies continued to operate as such until 1951. By then, the shareholding had widened considerably and it was clear that if the industry was to continue to meet the growing demands of the market it must be reconstituted on a much broader basis. Accordingly, a public company was registered in that year with a capital of £170,000. This company, McSkimming Industries Ltd., took over the entire shareholding in the four parent companies. In 1953, the capital was increased to £200,000 and, in 1956, a further £100,000 was added to the authorised capital, which now stands at £300,000, with 250,000 shares issued and fully paid. It is notable that in 1958 the book value of the shareholders' funds amounted to over £511,000. All trading activities were taken over by McSkimming Industries Ltd. in 1957, and the subsidiary private companies liquidated.

Nine factories and a coal mine.

The Company operates nine factories as well as the coal mine at Benhar. It has three distribution yards and a roofing

SETTING THE MOULDS of closet pans at Benhar.

Photo: Mobile Press Pictures.



SANITARY WARE entering the kiln. Photo: Campbell Photography.

contract department, as well as two scientific laboratories continuously employed in control and research.

The largest individual factory is the pottery at Benhar (near Balclutha), which is engaged in the manufacture of white sanitary earthenware, principally bathroom basins and closet pans. It is the only pottery in New Zealand producing this type of ware and a nation-wide market is supplied. Fireclay urinals, laboratory sinks and similar lines are also in steady production. This pottery has been recently rebuilt and thoroughly modernised and can now compete in efficiency with any pottery of similar size. Visitors with knowledge of overseas practice have commented very favourably on the high standard of scientific control used here.

Salt-glazed earthenware sewer pipes are produced in three factories — Benhar, Kensington (Dunedin) and Glentunnel (Canterbury). The Otago-Southland market is fully dependent on these factories, as is also a considerable portion of the Canterbury market.

Concrete pipes and other lines.

Reinforced spun concrete pipes in diameter from six inches to five feet are made in Dunedin and also in Invercargill.

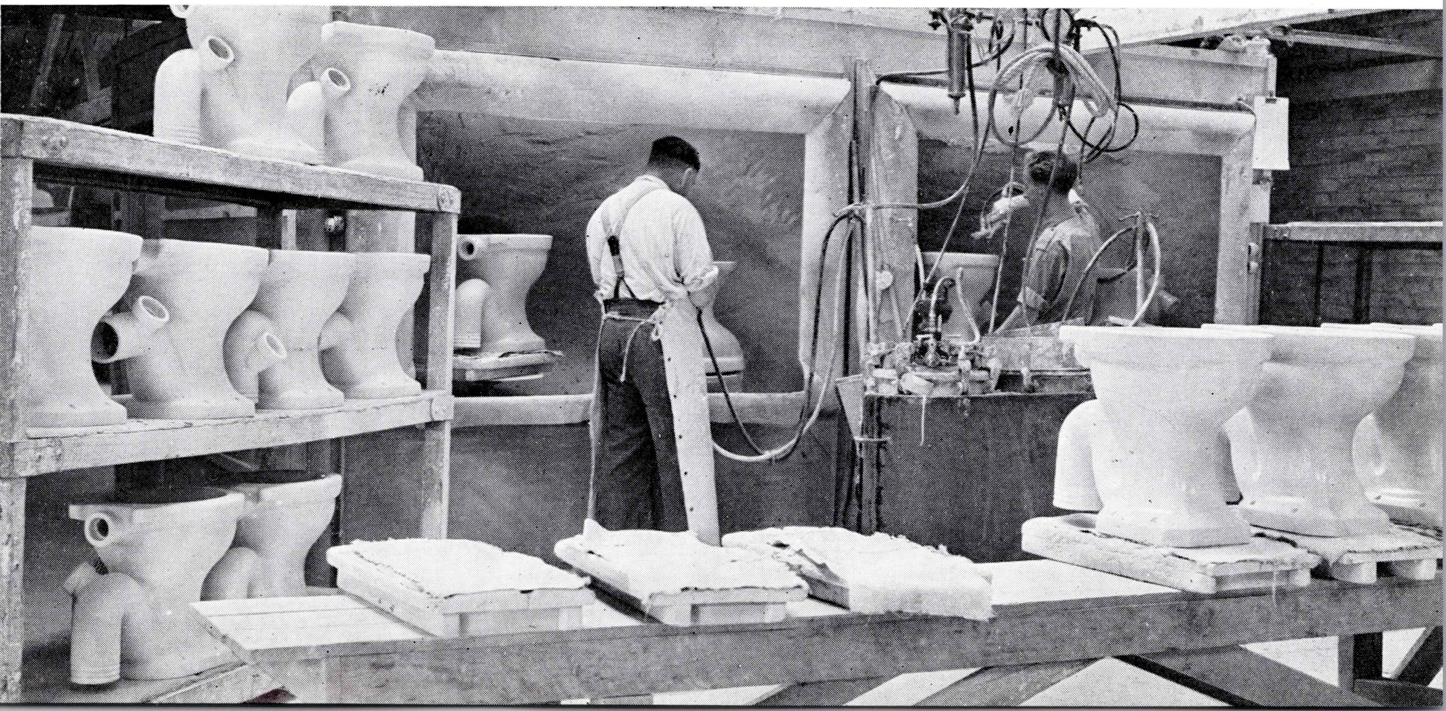
Farmers' field pipes are made by a factory exclusively devoted to this line at Waikiwi. Considerable quantities are also produced at Abbotsford and Glentunnel and some of the larger sizes at Benhar.

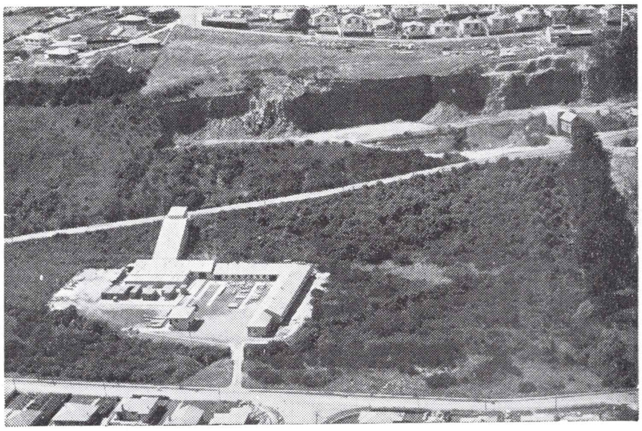
Bricks of high quality, which are particularly suitable for facing purposes, are made at Abbotsford and Glentunnel.

Abbotsford also make roofing tiles of the "Marseilles" pattern which are laid by roofing teams operating throughout the South Island.

The production of firebricks and refractory shapes is the specialty of an Invercargill factory which supplies a large proportion of South Island needs. The South Island agency for the famous British "Morgan" refractories enables the Company to give to its customers a complete range of all refractories.

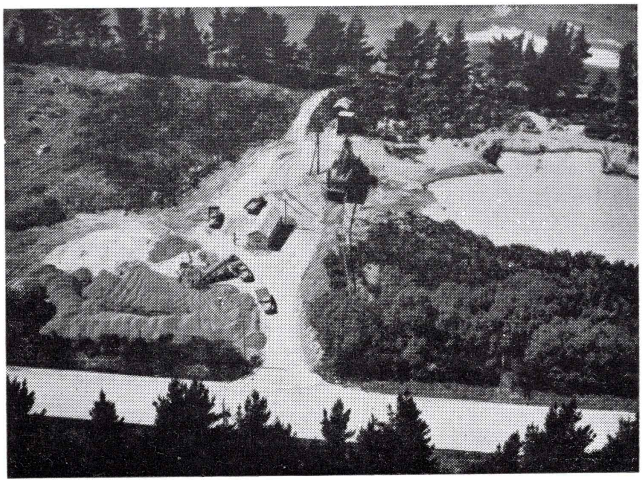
GLAZING of sanitary ware being carried out in this department of the pottery at Benhar. Photo: Mobile Press Pictures.





AERIAL VIEW of The Petrous Tile Co. Ltd's factory in Kaikorai Valley, Dunedin.

SAND AND SHINGLE PLANT, Kaiapoi, which supplies most of the aggregates used in the Christchurch factory.



STACKING AND LOADING TILES necessitates the use of up-to-date mechanical handling equipment to achieve speed and to ensure that tiles are not damaged.

On Roofs from Blenheim to the Bluff—

THE PETROUS TILE

When The Petrous Tile Co. Ltd. was established in Dunedin in 1917, many problems in manufacturing processes had to be solved before it was possible to produce first-class roofing tiles and other concrete products. The pioneer owners of the Company considered superior quality more important than turning out a product whose only merit was cheapness, and this is the basis on which the business was founded and a reputation has been built.

Through the years the Company's activities have expanded from the original site in Dunedin and there is now a factory in Christchurch. The Company's capital when it was established was £2,000, and a good indication of its growth is that today's capital is £50,000, of which £40,000 has been issued and is fully paid, the shares being listed on the Stock Exchange. Particular progress has been made in the past five years, and the Company is proud of its achievement in its own particular field: the Atlas concrete roofing tiles manufactured by Petrous with the massive automatic plants are considered to be the equal of any other tiles made in New Zealand. The Atlas tile machine is of New Zealand design, and similar machines are used throughout New Zealand, Australia, South Africa and America.

The Company's Dunedin factory covers approximately 14,000 square feet on about seven acres of land, on the Kaikorai Valley Road which is being developed as the main southern outlet from the city. The Christchurch factory is situated in Papanui on approximately four acres, with an extensive sand and gravel pit at Kaiapoi supplying a considerable proportion of the aggregates required.

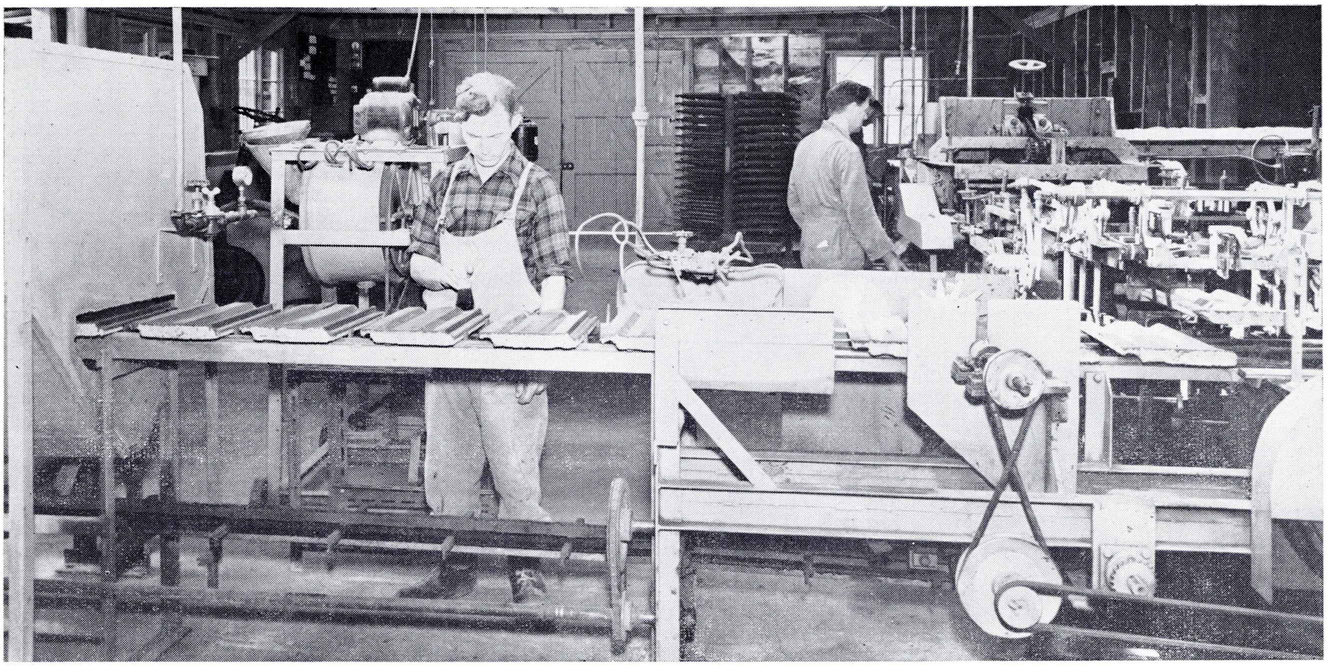
Standard lines produced by Petrous at present are roofing tiles, wash tubs, fuel boilers, paving slabs, steps and stringers, fuel and compost boxes, garden vases, and other pre-cast concrete products to specification. A recent development in the Dunedin factory has been the fabrication of laminated plastic tops for benches, tables, counters and bars.

The Company's products are distributed by various organizations throughout the whole of the South Island, and from Blenheim to the Bluff you can see roofs tiled with the products of The Petrous Tile Co. Ltd.

THE CHRISTCHURCH FACTORY, on four acres of land in the suburb of Papanui.

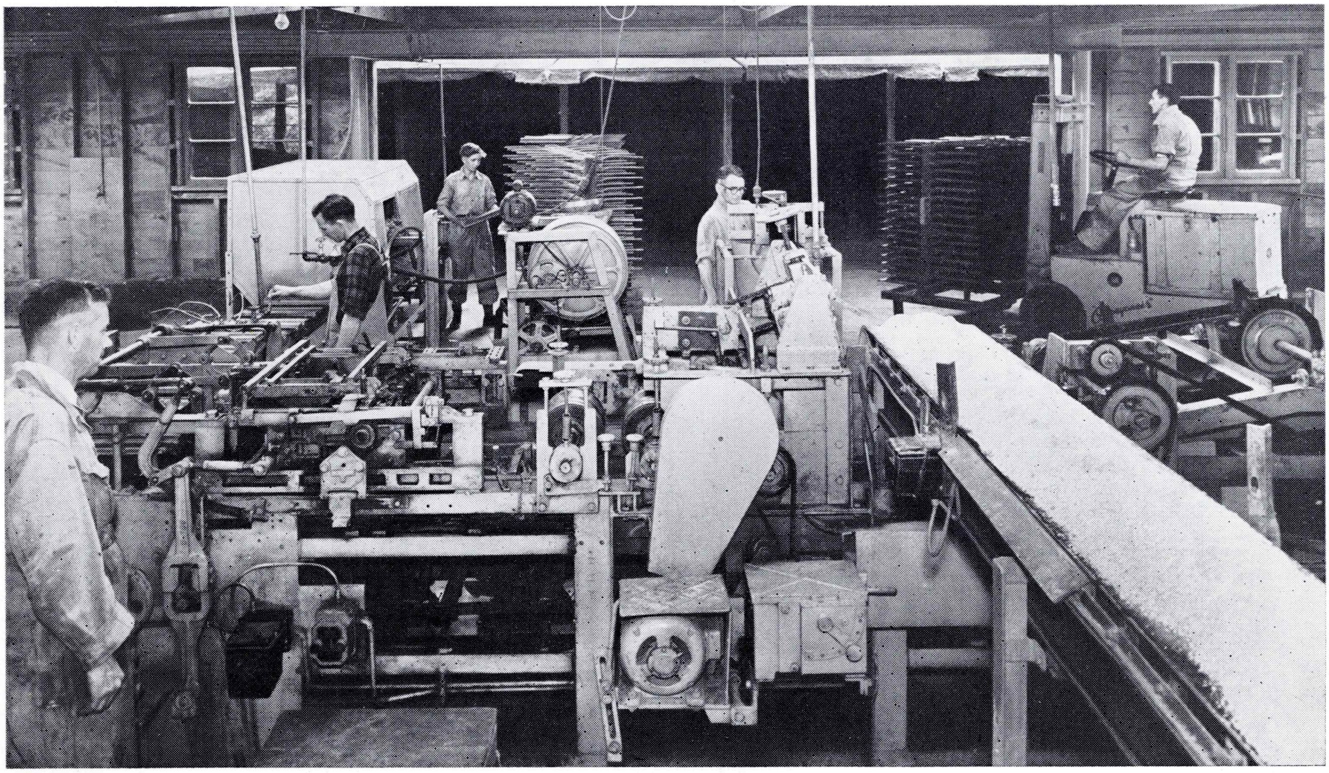
Atlas Tiles

CO. LTD *Dunedin and Christchurch*



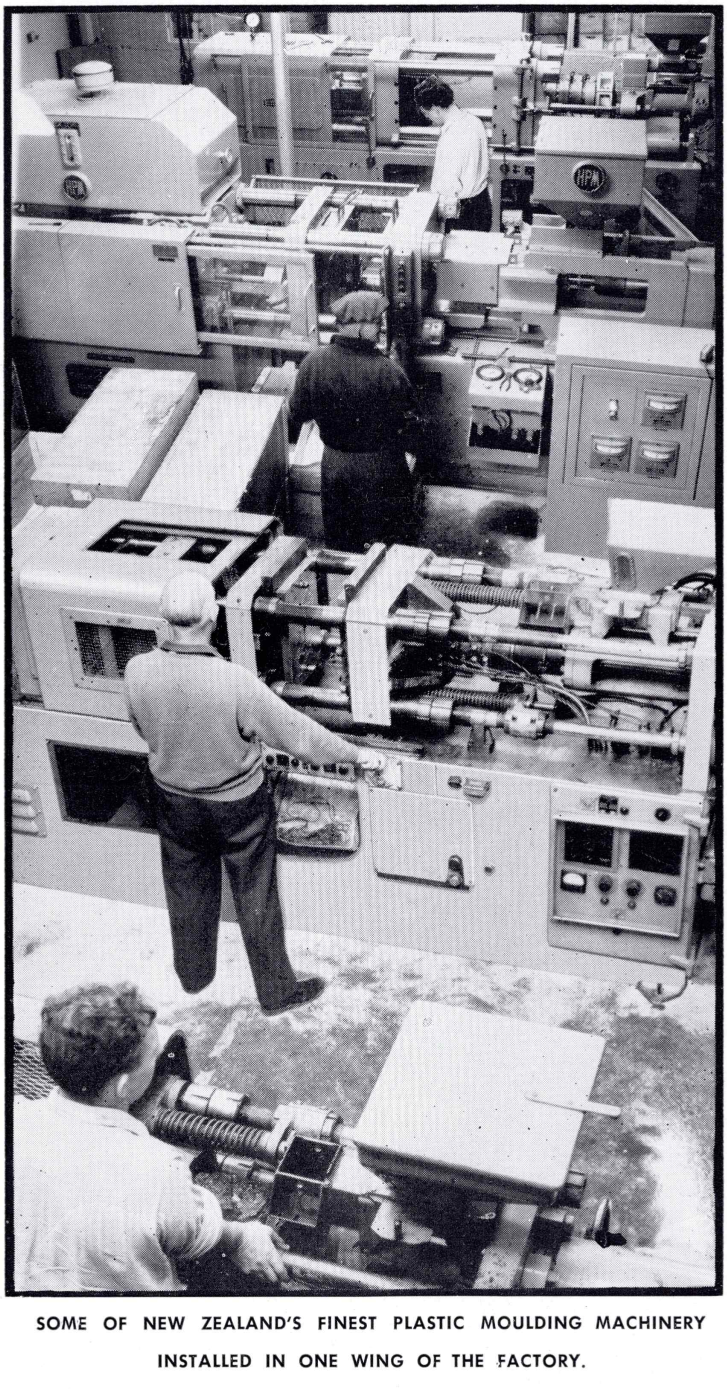
CHECKING TILES to ensure conformity to the highest standard.

UP TO 20 ROOFING TILES PER MINUTE: Modern machine for the manufacture of tiles in use at the Petrous factory, Dunedin.



PLASTIC PRODUCTS LIMITED

11 Victoria Street, Hamilton



SOME OF NEW ZEALAND'S FINEST PLASTIC MOULDING MACHINERY INSTALLED IN ONE WING OF THE FACTORY.

The firm of Plastic Products Ltd. was established in 1940 by Mr. J. D. M. Foreman, the first premises being a small building in Hood Street, Hamilton, which originally housed one small press. In under seven years, a move was made to the present building in Victoria Street, where over 60 employees, some of whom have been trained by the Company into expert New Zealand technicians, make Plastic Products Ltd. one of today's leaders in this most important industry.

Overseas Techniques Always Available

The international growth in the use of plastic — in industry, the home, at play, in fact practically everywhere one looks — is undoubtedly the result of its appearance and cleanliness, its strength, texture, pliability and economy of production. Parallel with this world growth is that of Plastic Products Ltd., for not only has the Company kept abreast of overseas methods, but also has to its credit the production of many articles of original design for local use, as well as for sale to our overseas markets such as England, Australia and U.S.A. In the research field, too, valuable technical data, production methods and processes have been originated and exchanged within the industry throughout the world. This exchange of techniques and, in many cases of the actual moulding tools, allows manufacturers in New Zealand to market plastic goods of equal quality, made from the same basic materials and by similar machines, at competitive prices, and at the same time as they are released in overseas countries.

National Economy Helped

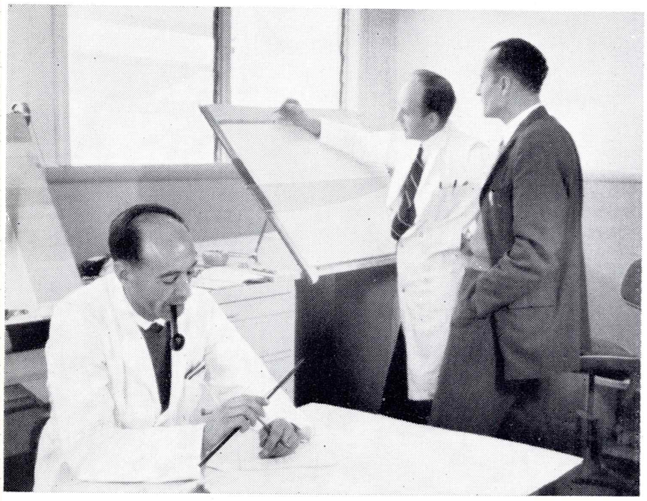
In the early years of the Company's existence, a contribution to the nation's economy was made in the exporting of millions of doll heads and parts, and, more recently, "Kaydee" sandals, as well as dairy machinery components. The component parts were designed after years of research in the Waikato, in conjunction with the scientists at the Ruakura Research Station. These are fine examples of the workmanship produced within the factory.

Modern Factory

Covering an area of 16,000 sq. ft., the modern, well lit and well ventilated factory has a pleasantly painted interior. Working conditions are excellent, and the staff is a happy one with an excellent team spirit that is borne out by the high unit production per operative.

The Latest Machinery

Only the best and most efficient machinery from all parts of the world is in use, many units being completely automatic. Two new machines have been added recently and this installation will add further to the claim of Plastic Products Ltd. — that the Company is one of the largest plastic moulders in this country today.



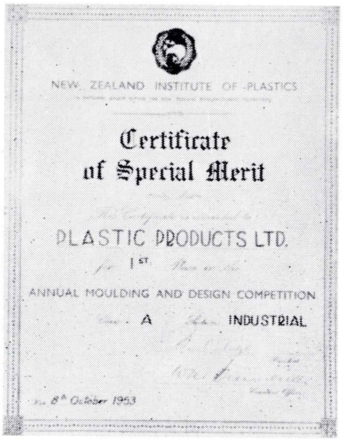
DISCUSSING A TECHNICAL DESIGN PROBLEM in the drawing office of Plastic Products Limited, Hamilton.

Quality Products Win Awards

In 1953, the I.C.I. Trophy for the Annual Design & Moulding Competition (Class A), sponsored by the N.Z. Institute of Plastics, was awarded to Plastic Products Ltd. In addition, some dozen other prizes have been won in recent years. Amongst the quality goods at present being produced are radio components, dairy machinery components, plastic sandals, ladies' fashion shoes, many shapes and sizes of plastic bottles, 'Melamine' table-ware, bedside lamps, houseware articles, and toys.

Future is Faced with Confidence

The future of plastics and their benefit to all is assured by the constant research for better methods, design, application and machinery throughout the world. For its part, Plastic Products Ltd. is keen to help manufacturers in designing and developing plastic components equal to world standards to suit their machinery or products, and, in so doing, to help bring to the people of New Zealand plastic articles of quality at prices more than competitive with overseas goods.



NEW ZEALAND INSTITUTE OF PLASTICS

Certificate
of Special Merit

PLASTIC PRODUCTS LTD.

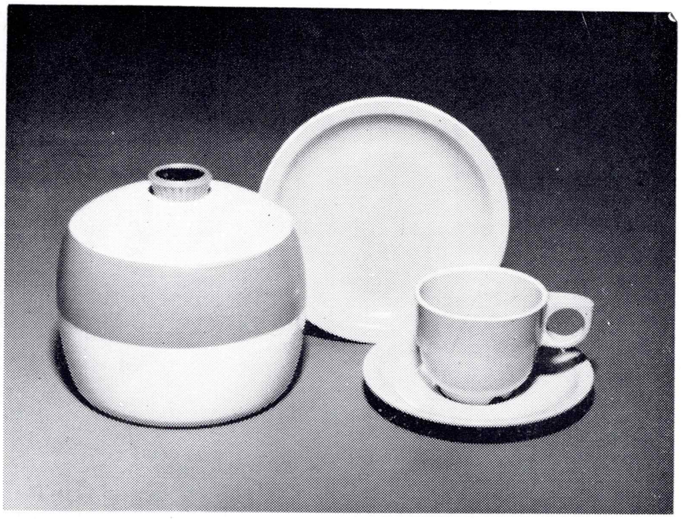
1st

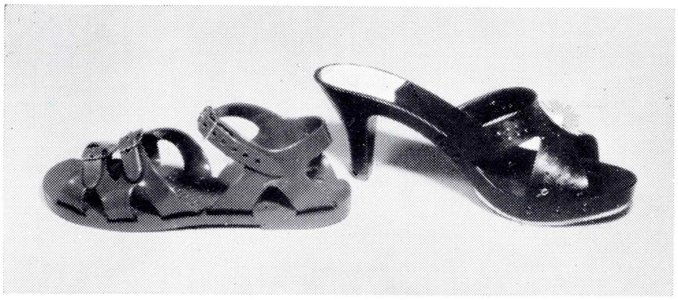
ANNUAL MOULDING AND DESIGN COMPETITION

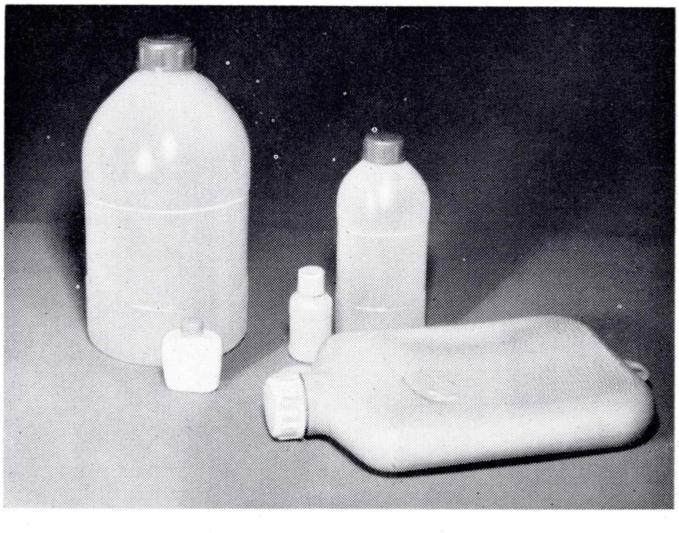
A INDUSTRIAL

8th October 1953

AWARDED BY THE NEW ZEALAND INSTITUTE OF PLASTICS, this certificate is one of the many held and prized by the Company.

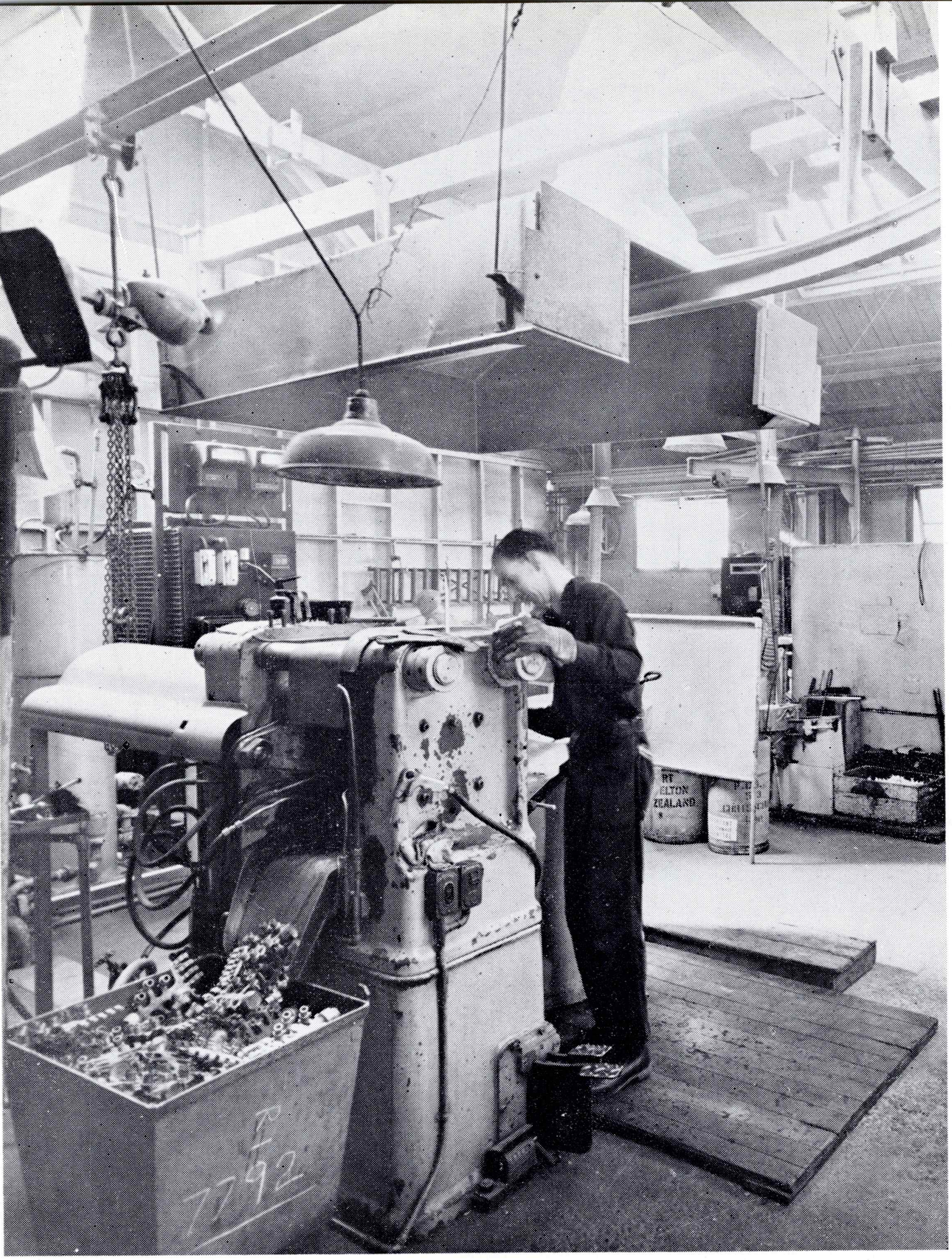






A FEW OF THE MANY LINES produced by Plastic Products Limited for overseas and local markets.

Photographs: Studio One



PLASTIC & DIECASTING LTD

14 Hazeldean Road Christchurch

The firm now known as Plastic and Diecasting Ltd. commenced operations in 1938 as Diecastings and Plastics, a subsidiary of Vale and Co. Ltd, Christchurch, heating and ventilating engineers. It was formed to manufacture certain plumbers' requirements and ventilating components. A high pressure, cold chamber, brass and aluminium diecasting machine and a modern zinc diecasting, hot chamber machine were installed in the factory. Some toolroom equipment for making dies was also put into production, but it was not long before war broke out and the Company, at the request of the Government, turned its attention to war work. Modern toolroom plant was provided by the Government for the manufacture of tools, jigs and gauges for the accurate checking of other gauges, and

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(Left) A VIEW OF THE HIGH PRESSURE DIECASTING DEPARTMENT, and (below) the assembly branch.

production for plants throughout the country. An extremely efficient heat treatment department was also added.

The experience gained during the years 1939-45 was found most valuable and provided the nucleus of the business now manufacturing P.D.L. equipment.

In 1943, the Company's name was changed to Plastic and Diecasting Ltd, and it was registered as a separate, private company. The year 1945 saw a change in production lines to builders' hardware and certain limited custom work, but in 1947 a decision was made to produce accessories for the electrical trade, and, except for a few items of builders' hardware and certain limited custom work, the whole resources of the enterprise were centred on the manufacture of electrical wiring accessories, switch gear, etc.

In 10 years, the Company has risen to become the largest manufacturer of such goods, and is considered to be the biggest compression plastic moulder in the country. Many Australian and New Zealand patents are held for ideas concerned with and executed within the organisation.

Close liaison is maintained with the electricians of the country in order to find their views and preferences, before new products are finally offered for sale. Membership of The New Zealand Institute of Electricians is held by the Managing Director, and his association with this body has been worthwhile.

At present, exporting is not being carried out due to the tremendous demand in New Zealand. New equipment and plant is planned to increase the capacity of the enterprise, which may leave exportable surplus. Because of the unique design and efficient manufacture of P.D.L. products it would be quite possible to export to other countries, provided their trade barriers were released or reduced.

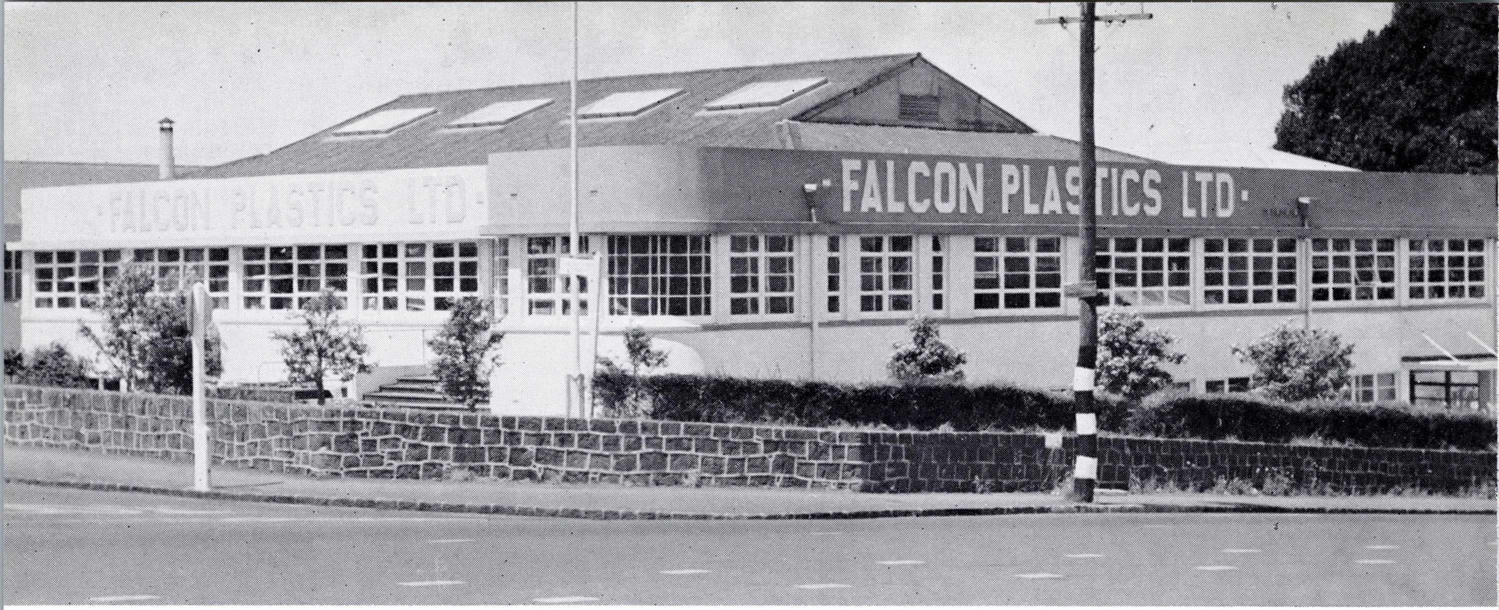
The present staff is approximately 160. Schedules of 24 hours per day are worked, six days per week, in the Plastics Department, and other related departments work extended hours. Where possible, locally-made products and materials are used, and a large number of New Zealand manufacturers supply the Company with their products.

While import control has always been considered necessary by both the previous and present Governments, prior to 1958 over half of the firm's total production had no protection either by means of tariff or duties. New Zealand manufacturers have a unique opportunity which allows them to design and make within the country goods peculiarly suitable for its needs, and this itself is a protection against imported goods, of which a large number of manufacturers have not been able to take advantage.

This Company makes every endeavour to design its products in such a manner that new benefits and sales features are offered to the purchaser; this has built up a feeling in the electrical trade that their interests are being considered.

In 1957, total shareholding in the Company was purchased by Mr R. H. Stewart, who has been Managing Director since 1947.

(Right) OPERATORS AT WORK IN THE DRILLING AND TAPPING SECTION OF THE PLANT; (below) the moulding of plastic components.



FALCON PLASTICS LTD Great South Road Ellerslie, Auckland

The year 1908 saw the arrival in New Zealand of the late Mr. J. H. Faulconbridge and his wife, who left their native Birmingham for this country shortly after their marriage. He had been employed in the Mother of Pearl industry where he was directly concerned in the production of pearl buttons of all shapes and sizes.

Twenty-four years later, in 1932, this training was to be an advantage when, with his two sons and limited capital, he commenced the manufacture of buttons. Initially, the materials used were Mother of Pearl, a small quantity of which was imported from Broome, Australia, and New Zealand woods. Later, cast resin imported from U.S.A. was the main material processed. All this was in the depth of the depression and business was very, very difficult, with the result that it was a continual struggle to keep the factory in existence. However, despite the many difficulties, the business began to prosper and was gradually developed into the present-day Falcon Plastics Ltd.

A new and vital link in the country's economy was brought into being with the establishment of this first button factory. Some years later, another company commenced production, and to-day there are four major button-producing companies in New Zealand.

Fume problems in the early days

In that year of 1932, Mr. Faulconbridge commenced his business in the top floor of a wooden building in Eden Terrace which housed as well, a brass foundry on the ground floor, and memories of the fumes which seeped through the floor each time a casting was poured, are vividly called to mind. Two years later, Mr. Faulconbridge moved the business from this 400 square feet area, to a more substantial building of 1,200 square feet at the corner of Broadway and Alpers Avenue, Newmarket. Shortly afterwards, the company of Buttons (N.Z.) Ltd. was founded with a capital of £2,000.

Output though small, was steadily increasing, and, in 1939, the Company moved to Balm Street, Newmarket, where a new building of 3,500 square feet was leased. Up to this time, production had been confined to the manufacture of buttons using casein and cast resin materials. A 100-ton compression press to enable the Company to widen its scope with the production of compression moulded buttons, such as trouser and shirt buttons, was ordered from England. About the same time, capital was increased to £5,000, and a few years later to £10,000.

In 1946, the company was again beginning to outgrow available floor space, and the Board decided that the time had come to extend activities into the field of Plastics. Two important decisions were made. Firstly, with past experiences of three moves to larger premises, it was decided that the next move would be to premises sufficiently large to cater for future expansion, and that the site would be owned by the Company. To implement this the present property was purchased at Great South Road, Penrose, and a two-storey, reinforced concrete factory of 12,000 square feet was erected. This has since been increased to 18,000 square feet. Secondly, an order was placed in Canada for one of the latest injection moulding machines complete with two moulds, as a result of which the first plastic clothes hanger was produced in New Zealand.

Buttons, and extension to other fields

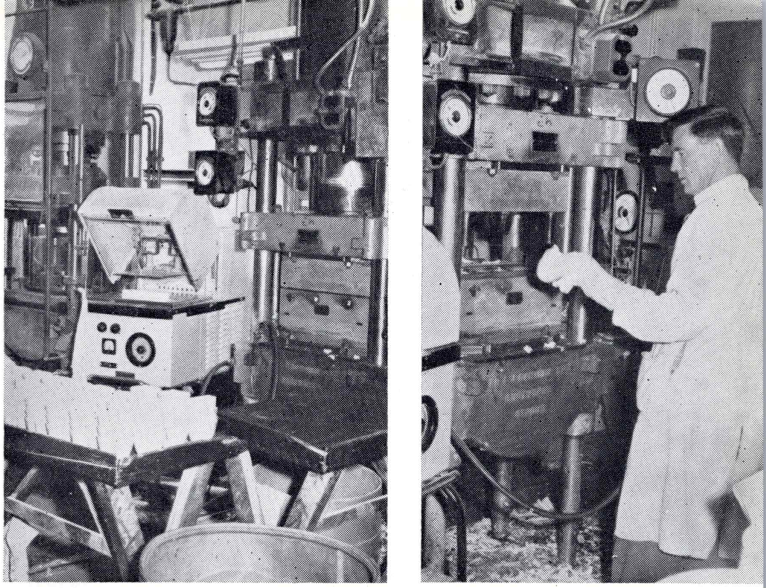
Transfer and installation of new plant took place during Christmas, 1946 and the Company changed its name to Falcon Plastics Ltd. With the arrival of the injection moulding machines activities of the Company covered three departments:

(1) Orthodox button manufacturing using cast resin and casein.

(2) Compression moulding, but mainly in the field of button production.

(3) Injection moulding, covering, in the main, utilities, kitchenware, toys and custom moulding.

HYDRAULIC PRESS used in the moulding of buttons. The piece held by the operator is only one of four pieces produced by this mould.



(Right): REMOVING DURAWARE CUP from mould. **(Left): HYDRAULIC PRESSES** and high frequency heater used in the production of Duraware.

From time to time overseas trips were made by executives of the Company to ensure that methods and machines were kept up to date with overseas developments and practices, and also to arrange for the use of overseas moulds. Plant was added in both the injection and compression departments and, in some cases where it was found that available overseas plant was not suited to the relatively small New Zealand market, our engineers developed and built special production machines with emphasis on automation.

Our button section is a highly specialised department and concentrates mainly on the production of requirements for the clothing industry in New Zealand. Continual developments are taking place here with a view to covering all essential needs, the latest being the introduction of the very popular imitation-horn suit button, which is compression moulded with the pattern right through the button. Overseas, this has proved a very popular item, and has largely superseded the old type casein which is not so durable, and the horn button which is much more expensive.

From plastic coathangers to battery caps

The injection moulding division has progressively developed and is now fully equipped to handle all forms of production with the exception of very large items. Output from these machines is extensive and covers articles ranging from coathangers, kitchenware, hardware and toys, etc., to ball floats for cisterns and battery caps for car batteries.

Prior to 1956, the compression moulding section concentrated on the production of buttons and a small amount of custom mouldings. In 1955, arrangements were made for the introduction into New Zealand of Melamine tableware under the trade name of "Duraware". This type of tableware, although very popular overseas, had not previously been manufactured in this country. Operations were commenced along lines set down as a result of a survey visit overseas by the Managing Director, and, with specialised machinery installed, production has been developed over this period until today the Company is by far the largest user of Melamine moulding powder in New Zealand. Currently the Company holds a two year contract with the New Zealand Government, supplying the Army, Air Force, Health Department and many institutions.

Directors: Mr. E. H. Nolan (Chairman), Mr. L. C. Miller, Mr. H. L. Lewis, Mr. R. Faulconbridge, Mr. I. Faulconbridge.

Man./Director: Mr. R. Faulconbridge.

Factory Manager: Mr. I. Faulconbridge.

PLASTIC FORMERS (N.Z.) LTD

Eighteen years ago in Sydney, Mr. Roy Hargreaves commenced a small business, forming letters from Perspex for the manufacture of outdoor advertising signs. Today, that business, under the name of Crystalite Plastics Pty. Ltd., is one of the largest vacuum formers in Australia. Recently, Mr. Hargreaves relinquished his managerial control of the Company, this side of the business now being in the hands of his son, Mr. Roy Hargreaves, Junr., and Mr. Ray Bowes.

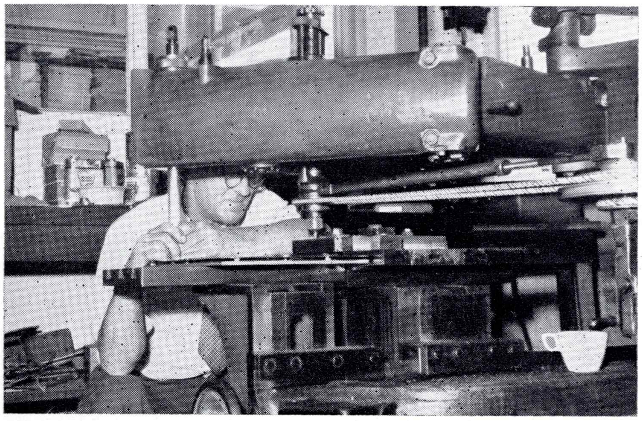
The Company is a large producer of all types of plastic signs, and is well known in the refrigeration field for its wide range of component parts. It produces babies' baths, kitchen sinks and sink tops, large bowls of varied types, toys, fluorescent light fittings, and many other items.

In 1957, Mr. Roy Faulconbridge, Managing Director of Falcon Plastics Ltd., entered into negotiations with Mr. Roy Hargreaves, Senr., the outcome of which was the formation in New Zealand of Plastic Formers (N.Z.) Ltd., the shares of which were contributed by Falcon Plastics Ltd., Auckland, and Crystalite Plastics Pty. Ltd., Sydney. The Company has been formed to produce items as produced by Crystalite Plastics Pty. Ltd., which firm has supplied the plant and is supplying the 'know-how' and the initial moulds. There will also be a continuing liaison between the two Companies.

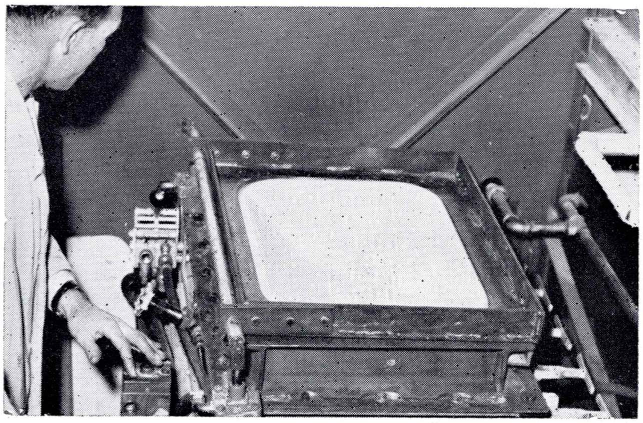
Plastic Formers (N.Z.) Ltd. began production early in 1958, and it is anticipated that the Company will fill an important role in the Plastics Industry in New Zealand.

Directors: Mr. E. H. Nolan (Chairman), Mr. R. Hargreaves, Senr., Mr. R. Faulconbridge, Mr. I. Faulconbridge.

PANTOGRAPH in use in the tool room of Falcon Plastics: cutting a cavity in the building of a mould.



FORMING of baby bath by vacuum process.



Laminated plastics - the vigorous growth of an industry

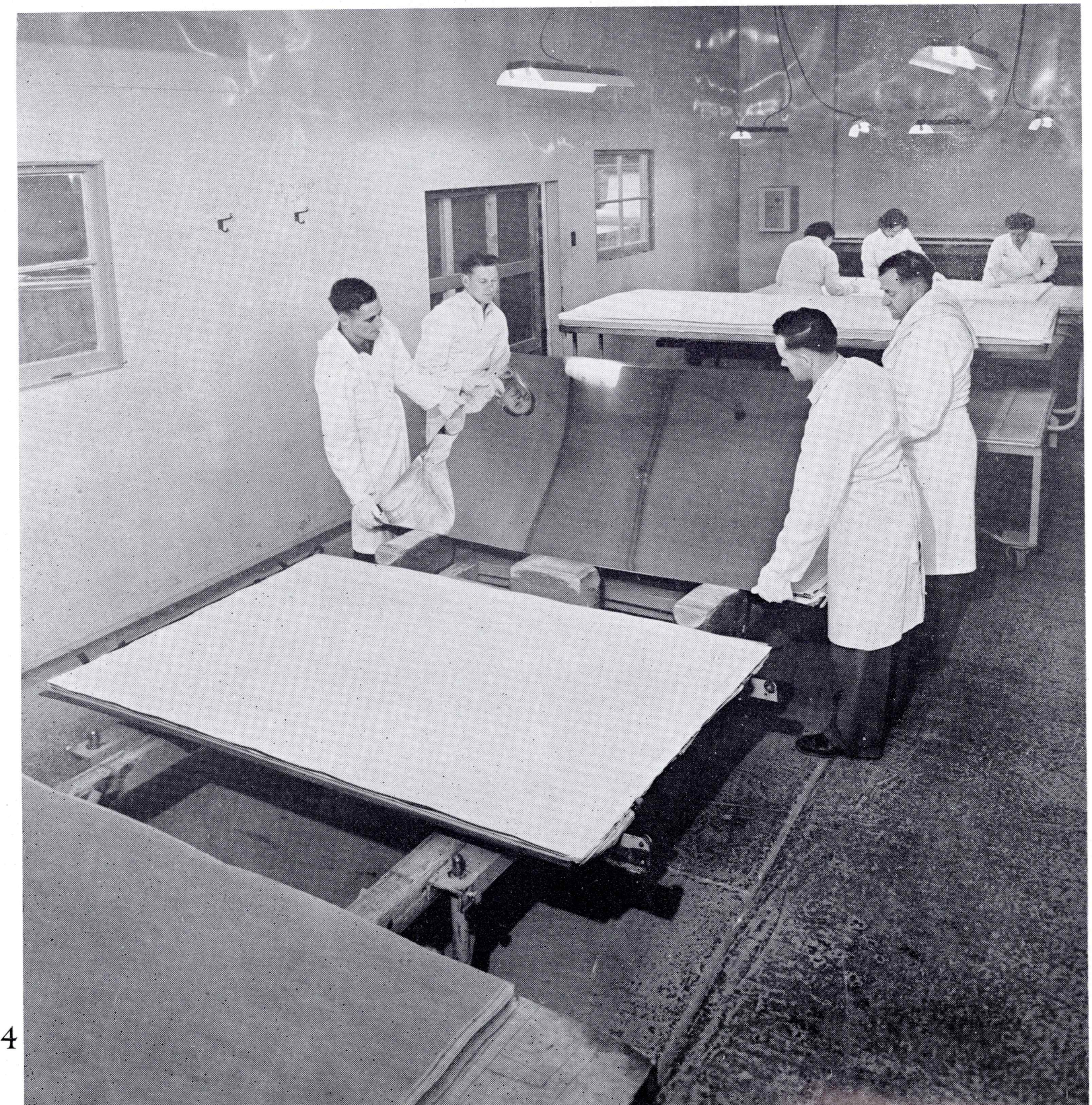
LAMINEX PTY LIMITED

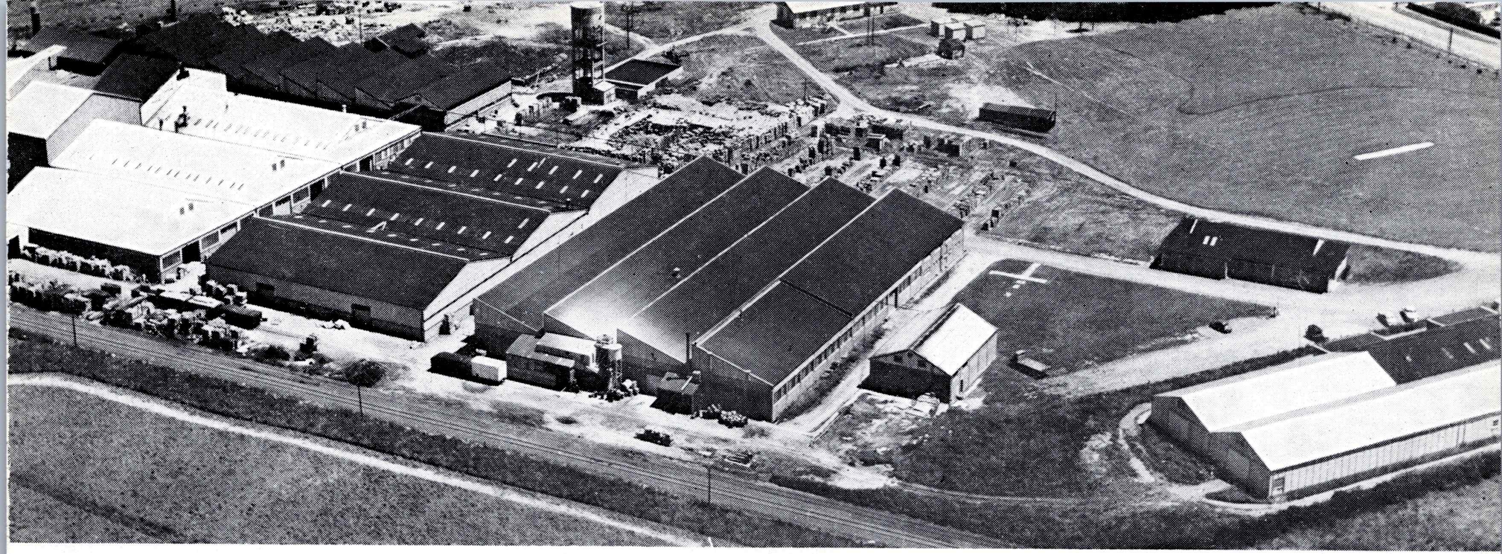
Hornby, Christchurch

In 1946, Mr. R. M. Sykes founded, in Melbourne, Australia, what has since proved to be a vigorous young giant. In association with the multi-million Australian Consolidated Industries Group, Mr. Sykes pioneered and built up the laminated plastics industry in Australia and New Zealand. Mr. Sykes relinquished his managerial status in 1957, but remained on the directorate. Mr. S. F. Rust, M.Sc. became Australasian Manager early in 1958.

In 1955, the manufacture of Laminex was commenced in New Zealand, under the direction of Messrs. J. K. Dobson and A. K. Hamilton. With the rapid growth of Laminex Pty. Ltd. and other A.C.I. industrial establishments in Christchurch, in 1956 the managerial chair was taken over by Mr. J. N. McBride and with him are associated Mr. J. A. Steer (formerly of Melbourne), Works Manager, Mr. M. J. Manhire, Sales Manager, and Mr. K. Robinson, Senior Northern Districts representative.

PREPARING THE PACKS OF PAPER which will form a sheet of Laminex. Note the chromium plated stainless steel sheets, and the clinically clean surroundings.





AERIAL VIEW of the Laminex Factory, Hornby, Christchurch. Associate Companies operating in this Hornby area are Crown Crystal Glass Pty. Ltd., and A.C.I. Fibre Packages Pty. Ltd., members of the A.C.I. Group of Companies.

An entirely new type of wallboard

At no time has Laminex Pty. Ltd. enjoyed any sort of tariff protection — nor even today can it be claimed that import licensing has helped its development in any way. Despite, therefore, being in open competition with overseas manufacturers, Laminex Pty. Ltd. has flourished. Strangely enough, also, it was this New Zealand venture which brought about and has maintained substantial price reductions. Certainly, the connection with Australia and other countries has been of material assistance but, in addition to keeping pace with latest overseas developments, Laminex Pty. Ltd. of New Zealand is a long way ahead of similar industries in any other country in the development of an entirely new type of decorative wallboard, which has an export potential.

Three of the main raw materials required by Laminex Pty. Ltd. are drawn from other New Zealand manufacturers, two of these materials in particular being first manufactured in New Zealand at the instigation of Laminex Pty. Ltd. In fact, the specifying and use of local materials may be taken as a good example of one New Zealand industry "fraternising" with another to the advantage of the New Zealand economy as a whole. There is a relatively small percentage of imported raw material in the Laminex products. To date, Laminex Pty. Ltd. is the only manufacturer of laminated plastics in New Zealand, and looks forward to the day when other manufacturers commence to operate within the Dominion.

Range of products

Laminex Decorative Laminate (standard grade): This is the ideal material for surfacing furniture, sink benches and for many other applications. There is a wide range of colours and the Woodgrains.

Laminex Decorative Laminate (post form grade): The use of the words "post form" is an indication that the material may be more readily formed to shapes and designs by the furniture manufacturer. This is a comparatively recent development, originally from overseas, but the Christchurch factory has successfully proved that once again the product may be manufactured from materials basically of New Zealand origin.

Industrial Laminates: As with all laminated plastic industries of any consequence, Laminex Pty. Ltd., Christchurch, manufactures special laminates for the electrical and engineering industries.

Lamiwall — Decorative Wallboard: This is a real success story. After many years of painstaking and often frustrating research and hard work, the Christchurch factory developed a wallboard having the virtues of beauty, durability and relative economy. In other parts of the world a "halfway" process has been developed, but, so far, there has not been seen in New Zealand any wallboard having a standard of merit even approaching that of Lamiwall.

Factory situation and facilities

Laminex Pty. Ltd. is one of three industries of the Australian Consolidated Industries Group operating on a 30-acre block in Shands Road, Hornby. The property has been acquired with a view to expansion and it has all the advantages of its own railway siding, easy access to the road, proximity to airport, abundant water supply, and many other features. Hornby township has grown rapidly, and further extensive housing development has been provided for in planning, so that, altogether, there is an assurance also of ample labour.

The Company's policy is to acquire first class plant and equipment, and also to develop particular types of machinery to suit special conditions. Throughout the three factories there are readily seen examples of research and effort in this type of development.

Raw materials

Two of the main ingredients in Laminex are a special type of brown laminating kraft paper and a resin suitable for treatment of that paper. In the wallboard, Lamiwall, the main basic ingredient is hardboard. All these three major raw materials are made in New Zealand, and it is quite correct to say that their general quality exceeds that of similar overseas materials.

Laminex Pty. Ltd. is very happy to have the opportunity of acknowledging the co-operation of these New Zealand manufacturers in developing high class products.

There is still a relatively small overseas content and this will continue for some years. In this respect, Laminex Pty. Ltd. is again fortunate in the liaison that has been established with the world's leading suppliers of the commodities required.

Manufacturing process

The two major products, namely, Laminex and Lamiwall, are manufactured in very similar processes. The main points of difference are that in Lamiwall the core of the sheet is composed of specially made hardboard, while in Laminex this core is built up of many laminations of specially treated brown paper.

Then again, in Lamiwall (and this is a particular feature of the board) an additional protective melamine impregnated film is pressed on to the reverse face.

The brief processing description now following applies to Laminex only, but little imagination will be required to visualise the process when Lamiwall is being produced.

Impregnating: Brown kraft paper, which comprises the core of Laminex, is fed through a bath of synthetic resin and enters a long drying tunnel where, upon emerging, it is cut to the requisite length. On a similar impregnating machine, but using a different type of resin, are processed the decorative and

continued

A COFFEE TABLE, lovely for a lifetime, with a gleaming, quick-cleaned Laminex top.

overlay sheets of paper. The resin with which these two types of paper is saturated is called Melamine and imparts the hard wearing and ever-clean surface. Both the decorative and overlay sheets upon emerging from the drying tunnel are conveyed with the treated brown kraft to the assembly room.

Assembly: Under conditions of extreme cleanliness and in an almost completely dust-free atmosphere, the assembly of the various packs is accomplished. Each pack comprises approximately one dozen layers of kraft paper on which is placed one layer of decorative paper and then a final sheet of white opaque overlay paper. This overlay fulfills the task of an extra protective film and becomes crystal clear after final moulding. White coated and gloved operators place on top of the assembled pack a sheet of chromium plated stainless steel. When a sufficient number of "packs" have been assembled, the whole build-up is fed mechanically into a press and the next stage of the manufacturing process commences.

Moulding: This is performed in an Hydraulic Press which is operated under most rigid conditions. This is not an ordinary machine and it exerts a total pressure of many thousands of tons. The Platens are steam heated and, when the "cooking" process is completed, are water cooled. The built-up packs mentioned in the preceding paragraph are mechanically loaded into the press and subsequently, when the cure is complete, removed by another mechanical operation. To all intents and purposes manufacturing is then complete, but there is a certain amount of finishing to be done, namely, edge trimming and back sanding. Then again, the finished product must pass rigid inspection. Incidentally, the stainless steels previously referred to are used again and again. They are very costly and must be kept in perfect scratch free condition. They are handled literally with "kid gloves".

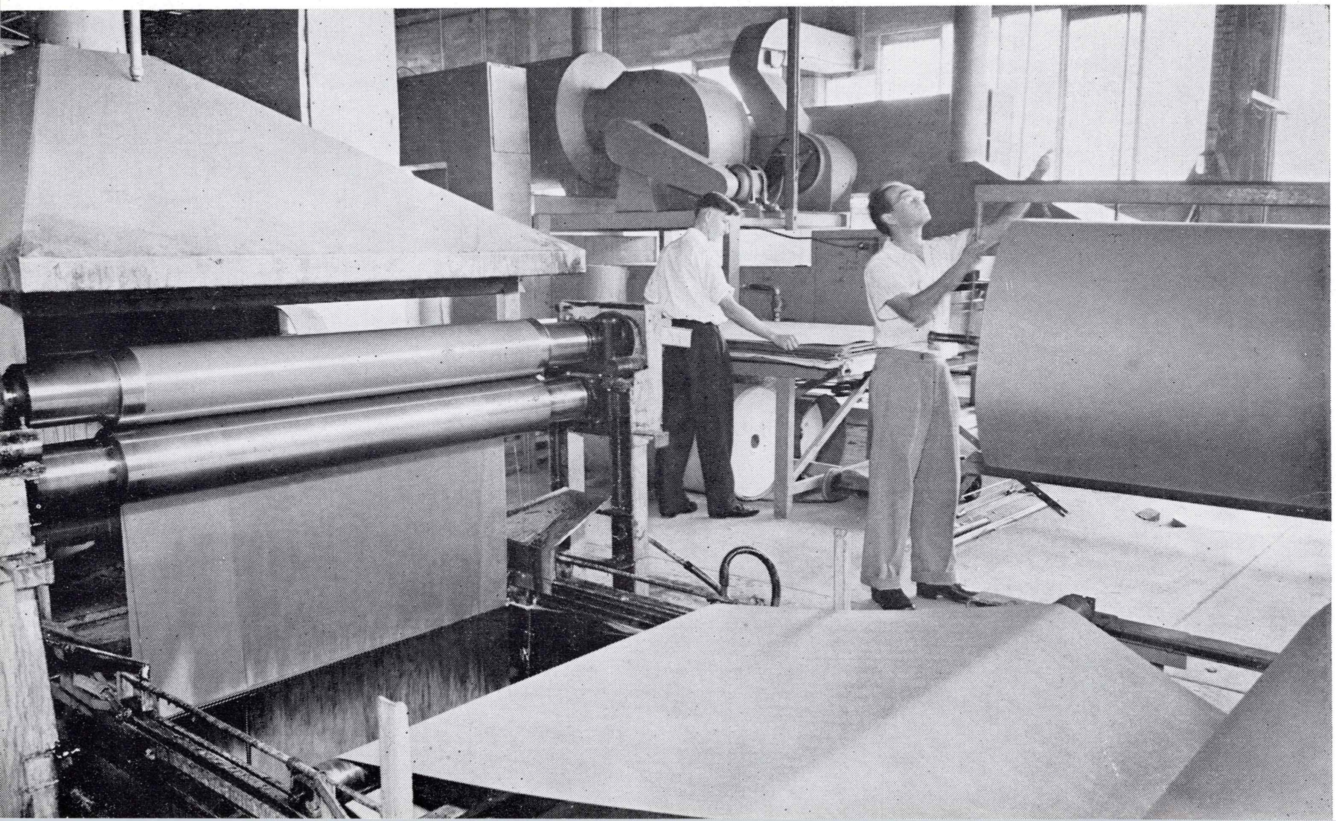
Marketing

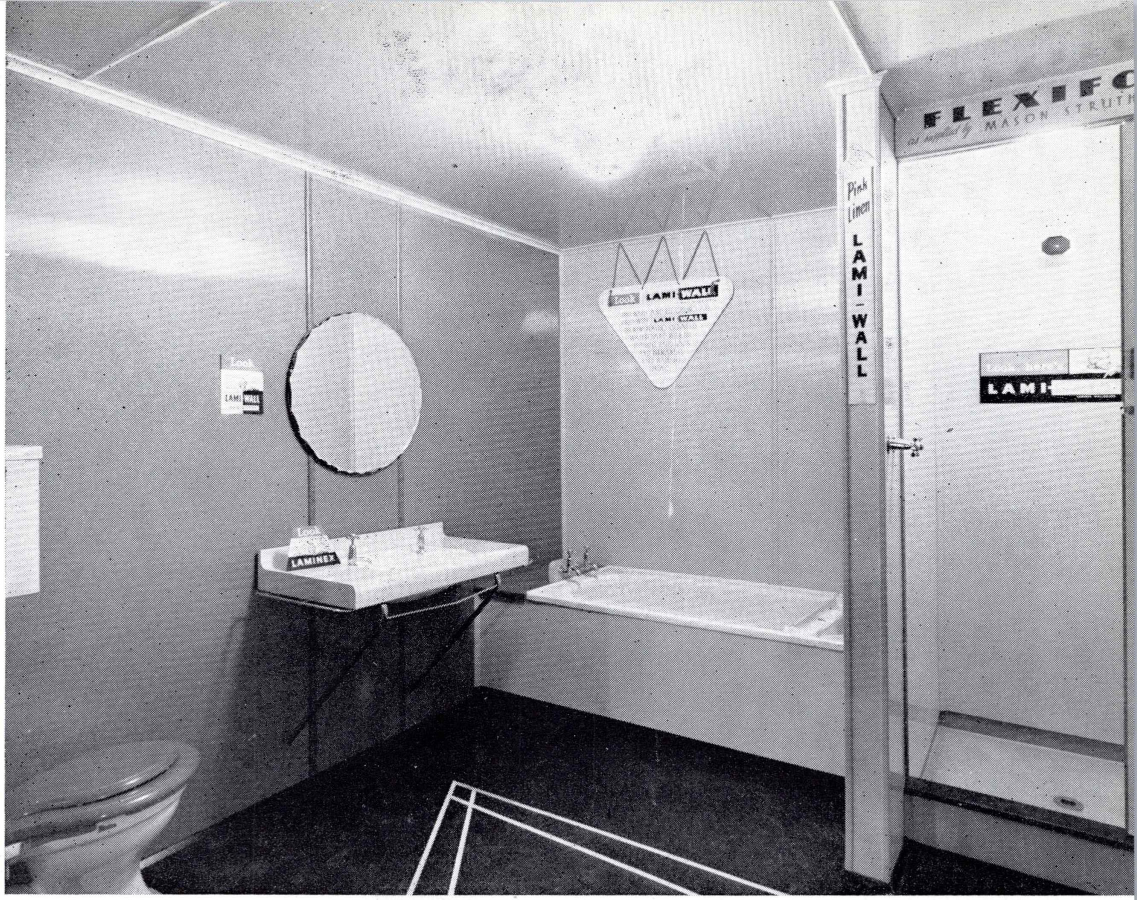
Laminex products are now well known throughout the country and a feature of the marketing policy is that selling prices in a place such as Rotorua, are exactly the same as they are in Christchurch, or in the far south at Invercargill. Laminex Pty. Ltd. believes that marketing should be developed on this principle and is one of the leaders in the field of this thought and development.

Future expansion

In addition to the factory space now occupied, Laminex Pty. Ltd. plans to acquire in 1959, a further 30,000 sq. ft. to accommodate additional plant and equipment required in connection with the expansion programme relating to its existing range of products. Early in the following year there are still further items "to be manufactured in New Zealand".

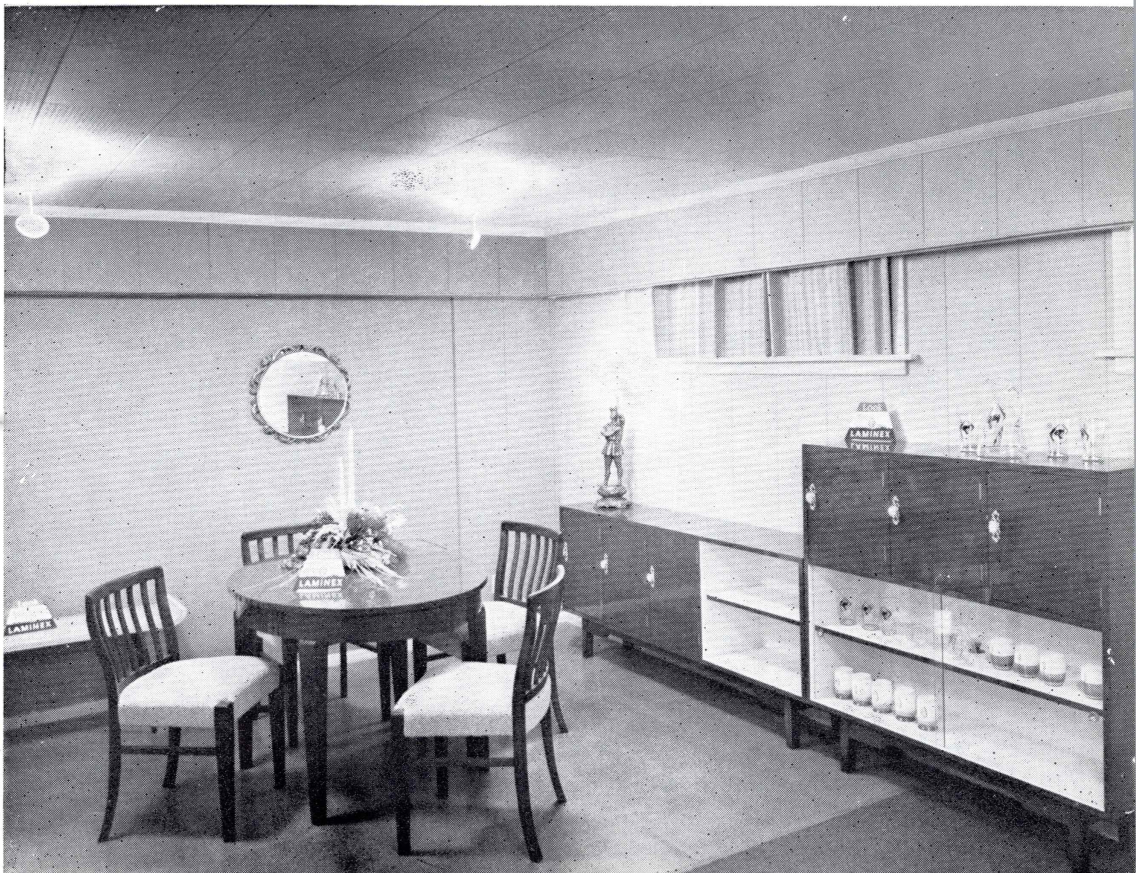
A ROLL OF KRAFT PAPER feeding through the resin bath and entering the drying tunnel.




FLEXIFO
as installed by MASON STRUTH
Pink Linen
LAMI-WALL
Look LAMI WALL
Look
LAMI WALL
Look
LAMINEX
Look here's
LAMI

BATHROOM: Lamiwall is used on the walls and ceiling in this bathroom and shower.

DINING SUITE: Laminex Red Mahogany is featured on the table top and on the front, sides and top surfaces of the sideboard.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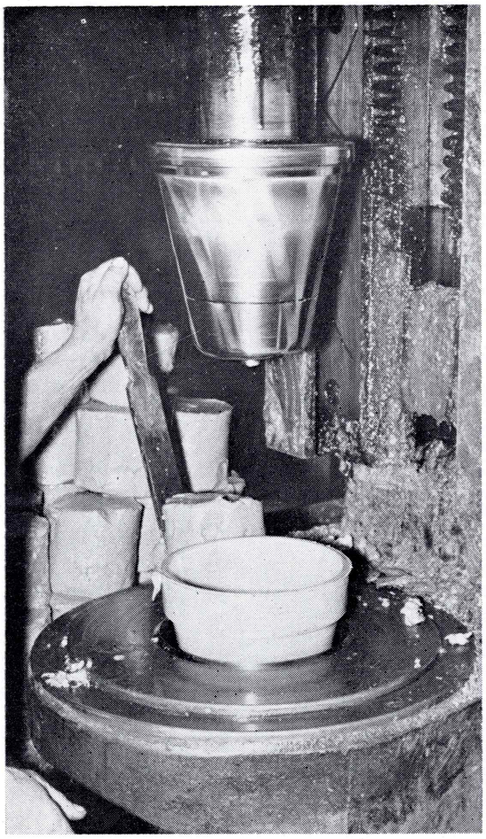
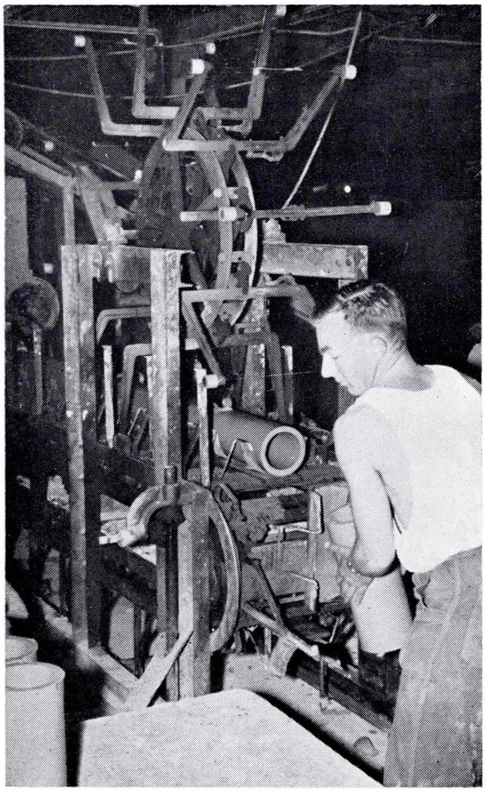


FIELD TILES come off the machine. Many miles of these are made for use in drainage in the Auckland Province.



A FLOWER POT being fashioned from the clay — one of the many different sizes made by Crum.

SEWER PIPES BY THE THOUSAND stand in rows for finishing and drying.

Photo: Rod Harvey

Photo: Sparrow Industrial Pictures

An Industry where family tradition and pride of workmanship play a vital part

CRUM BRICK, TILE AND POTTERY CO. LTD

New Lynn, Auckland

In 1875 Albert Crum emigrated to New Zealand from the West Country of England and settled in Ashburton. His father had been a stone carver but saw no future in it for his growing family. Against this background and that of his forbears, who were yeoman farmers accustomed to manual work, young Albert decided to direct his ability to the making of bricks. Along with two other men he began pugging clay, using wooden moulds and producing an average of 300 bricks a day, considered at that time to be a fair number.

Construction work on the New Zealand Midland Railway, connecting Canterbury with Nelson and the West Coast, gave a fillip to this industry. Crum bricks, even in those days, were selected for lining the Otira tunnel. The Hoffman kilns in which these bricks were baked are still in use today!

The turn of the Century

About the year 1905, Albert Crum visited Auckland, where he decided to settle. Soon afterwards he established the business known as the N.Z. Brick, Tile and Pottery Co. Ltd., on a 64-acre site adjacent to the New Lynn Railway Station. Opposition naturally emanated from other established interests, and, to add to his difficulties, local clay, as such, was found to be unsuitable. However, by trial and error, he hit upon the right mixture which allowed for fluctuations during drying and firing processes. It is interesting to note that clay at that time was being dug from pits where Carlaw Park now stands, in the vicinity of the Playhouse in Karangahape Road, and near Tuarangi Road, Grey Lynn.

Much of the machinery still in use today was blueprinted but never patented by Albert Crum, and patterns were generously passed over to friends in the business. Only when necessary was plant imported from England.

The present Company, a partnership of four sons, was established in 1929, following the merging of other firms into the present Amalgamated Brick & Pipe Co. Ltd. During the years of depression, erection of the works went on slowly, and it was not until 1934 that the first sale of flower pots was made. The earthquake disaster in Hawke's Bay in the 30s made clear the practical necessity for a building brick which would withstand the stresses of earthquake conditions, and following experiments such a brick was introduced by Crums. Later, field tiles and earthenware pipes and fittings, which comprise a large part of today's production, were added to the Company's lines.

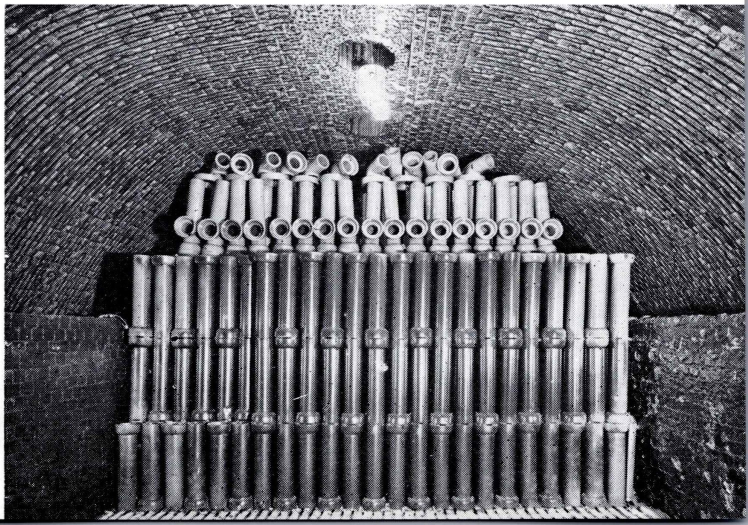
Under the guidance of Mr. Albert Crum until his death in 1951 and through the aptitudes of his sons, the business has continued to thrive. The loyalty of the staff did much to tide the Company over a difficult period, and it is worthy of note that the firm has never been involved in any internal industrial trouble.

The beginning of a New Company

The foregoing spirit has undoubtedly been reflected in the workmanship of this company's products. Quality sewage and drainage ware and earthenware products are to be found throughout the Auckland Province and beyond. The Company has built up for itself a reputation for complete satisfaction as a result of its high standard of manufacture.

GLAZED EARTHENWARE in the kiln.

Photo: Sparrow Industrial Pictures



An industry characterised by its rapid expansion not only in output but in the production

PLASTICS RESEARCH & DEVELOPMENT

Versatility of production and ideas are the keynote in the organisation of this thriving industry. Towards this end, plant, claimed to be the most comprehensive in New Zealand, has been developed. And it is not an extravagant claim that anything that can be made by high frequency welding anywhere in the world can be manufactured in this country.

Initially, contrary to labour legislation, this business was established in a front room of the home of Mr. and Mrs. Gilbert Johnston. Plastic raincoats, both sewn and welded, were in great demand, and since he had been associated with the welding of plastic rainwear for several years, Mr. Johnston decided to enter this industry. Weld work was undertaken, but, in order to cater for a very rainy winter, sewing was also done and then processed by outworkers. As a dress designer Mrs. G. Johnston continued from the foundation of the company as the designer of all rainwear. Quite a measure of the Company's success has been as a result of her association as a consultant (on styles and colours) to one of the main raincoat makers in Australia, which country she visits regularly.

P.V.C. (Polyvinylchloride), used in various forms, is the basis of all work. The raw material comes from all over the world, but principally from the United Kingdom. With the rehabilitation of Western Germany and its excellent chemicals industry, the Company has resorted to obtaining high grade plastic sheeting from that source. A considerable amount of material is drawn from Australia where a good industry is established. Latterly, due to price factors and competitive trade, Japan has come into the picture.

From the domestic industry in 1953, a small 800 sq. ft. factory, where 15 workers were employed, was erected at the back of the Johnston home. Two years later, the building was extended to 1,200 sq. ft. catering for 22 employees. Finally, in May, 1958, a 5,000 sq. ft. factory was erected on the present site, housing a staff of 30. This phenomenal growth has resulted from the practice, as is usual with most industries in New Zealand, of putting surplus cash back into plant. A wide range of lines is now processed and, in order to meet the demand, a wide range of machinery has been installed. The Company has taken the view that it can never count on any particular line developing without competition, or continuing under Government protection.

A recent discovery and its application

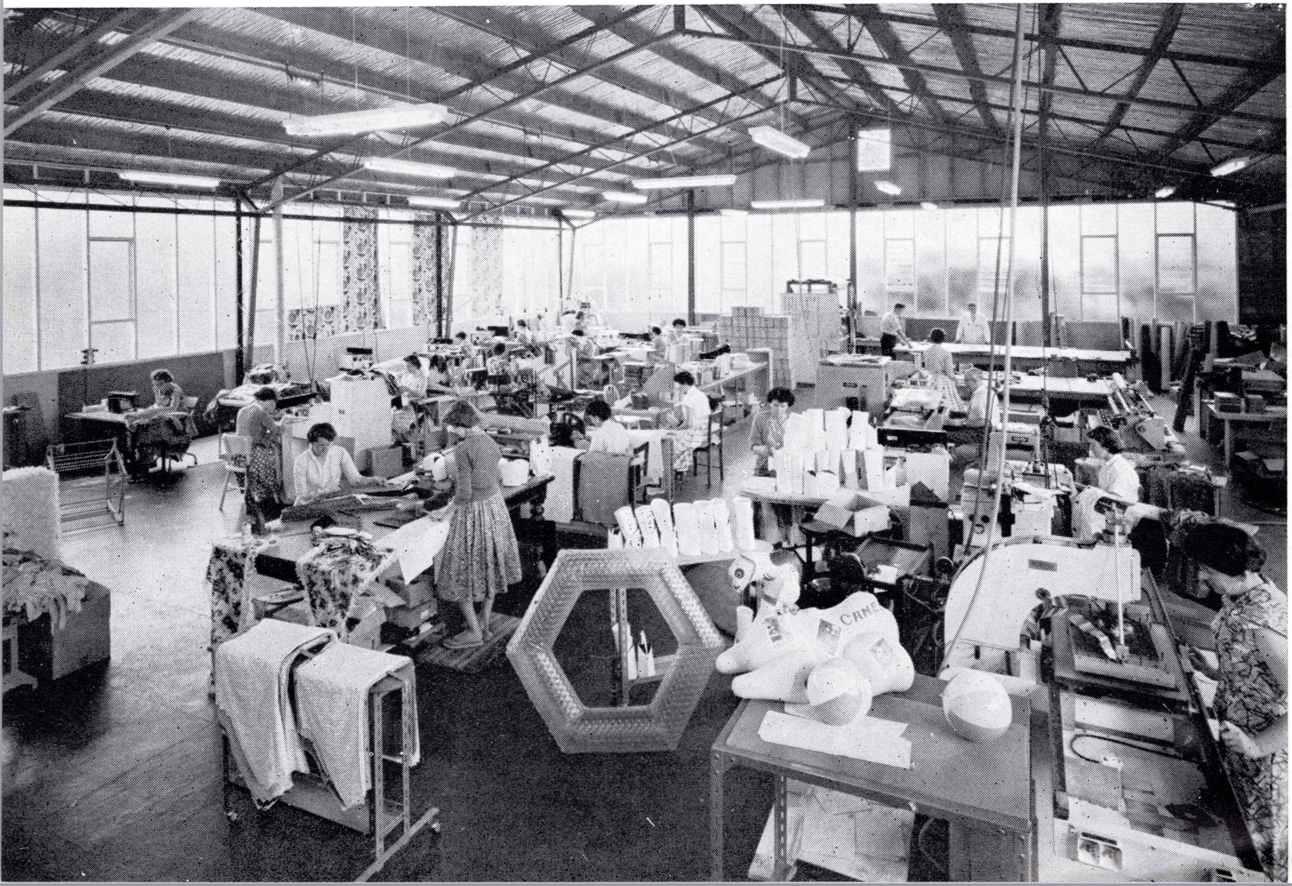
The principals of the Company have endeavoured to do things in their own particular way, for there is no long-standing knowledge behind plastic welding. It is a new industry. It developed out of radar during the war and ultra high-frequency equipment. Several journeys around the world have led to the adoption and embodiment of ideas gained. These ideas have been synchronised and adapted to the Company's particular plant in specific ways. For example, photomounts are produced for one of the large photographic organisations spread throughout New Zealand. As far as can be traced, a similar article is not made anywhere else in the world, in quite the same way as is done by this Company.

Circumstances have dictated a change-over from the basic product. The Company began by making plastic raincoats. The New Zealand climate is capricious and, very early in its history, it was realized that eight months' work under heavy pressure was not sufficient to found a permanent business. As a fill-in for the remaining four months, such items as goodwill advertising gifts, stationery photomounts, and inflatable toys were made, and this production has flourished beyond anticipation or desire.

Import controls and protective tariffs have been placed on certain items — for instance, the importation of clothing is protected. As a result, the management has planned its production, price structure and merchandising policy, on the assumption that import control may at any time be lifted. Plans are under way to build up an export trade in blood transfusion equipment. This Company is the first in New Zealand, perhaps in Australasia, or even in the Commonwealth, to produce blood transfusion equipment. Orders are to hand for the export of this particular line to Burma, Australia and the United Kingdom.

A SECTION OF THE COMPANY'S FACTORY at Penrose.

Sparrow Industrial Pictures



of new lines (N.Z.) LTD

Station Road, Penrose

"Parade" Rainwear

The organisation's reputation has been built upon its main product under the trade name "Parade". It has endeavoured to produce plastic rainwear of a standard that would get away from the oft-repeated criticism that plastic rainwear does not last. A rather heavier material than is usually used goes into the manufacture of its product, and, whereas the usual method of processing is by means of small welders doing an 8in. to 10in. weld at a time, the policy has been to install plant that will do multiple work in lengths of 56in., i.e., a complete side or front of a garment in one operation!

Certain difficulties have been experienced with metal fasteners. A new development has been a fastening with a particularly heavy reinforcement — virtually a plastic moulded button in appearance, giving safer closure. Pockets and collars are fused in one operation as distinct from the older method of welding along the outline; this is characteristic of the Company's production. Recent reorganisation has resulted in the industry being able to produce up to 1,500 garments per day. The principals have planned and streamlined their production.

Regard for the individual

This is a specialised trade. Machines are used with which the average person is not acquainted. Labour has, therefore, to be semi-skilled to skilled. No real technical knowledge is necessary, but once a worker is able to set up her own welding machine turning out multiple production toys, etc., she has acquired a fairly high degree of skill. It is the Company's policy to take an interest in the individual and have her remain in its employ. Staff amenities and facilities leave nothing to be desired.

An extensive expansion programme is in operation. The manufacturing of floor covering is on the priority list. A new, highly specialised method of food packaging, and blood transfusion equipment are priority too. Allied to the latter is the hope of producing various types of plastic surgical equipment, without which the day of the modern type of miracle operation might have been remote. Artificial livers, kidneys, hearts, etc., are further specialities in production.

A considerable number of liners for the electrical and allied trades, moisture barriers for irrigation channels and movie film screens are but a few of the many items manufactured by this progressive company.

Directorate: Gilbert Johnston, Managing Director; Mrs. Gilbert Johnston, Design Director.

HEMS being welded on women's rainwear. The aim of the Company is always to improve methods of production.

Sparrow Industrial Pictures

ONE OF THE LATEST MACHINES used in the manufacture of plastic rainwear.

Sparrow Industrial Pictures

Standard concrete masonry units in 50 different types . . . by the million

VIBRAPAC BLOCKS LIMITED Hornby, Christchurch

VIBRAPAC (OTAGO) LIMITED Green Island, Dunedin

Throughout New Zealand, the word 'Vibrapac' means "Concrete Masonry" — available in over 50 different types of high quality building blocks. The twin Vibrapac plants at Christchurch and Dunedin have similar wide ranges of products, and use almost identical machines and processes, with the same high manufacturing capacity. Although the two companies are separate, they are closely allied and have many integrated policies and controls. Here we describe and illustrate the Christchurch plant and products, but much is applicable also to the Dunedin Company.

Last year, Vibrapac Blocks Limited at its Hornby plant, just south of Christchurch, made 2,500,000 units of concrete masonry, which if placed end to end, would stretch from Farewell Spit to the Bluff—an indication of the capacity of the plant and more important, the demand for this type of building material.

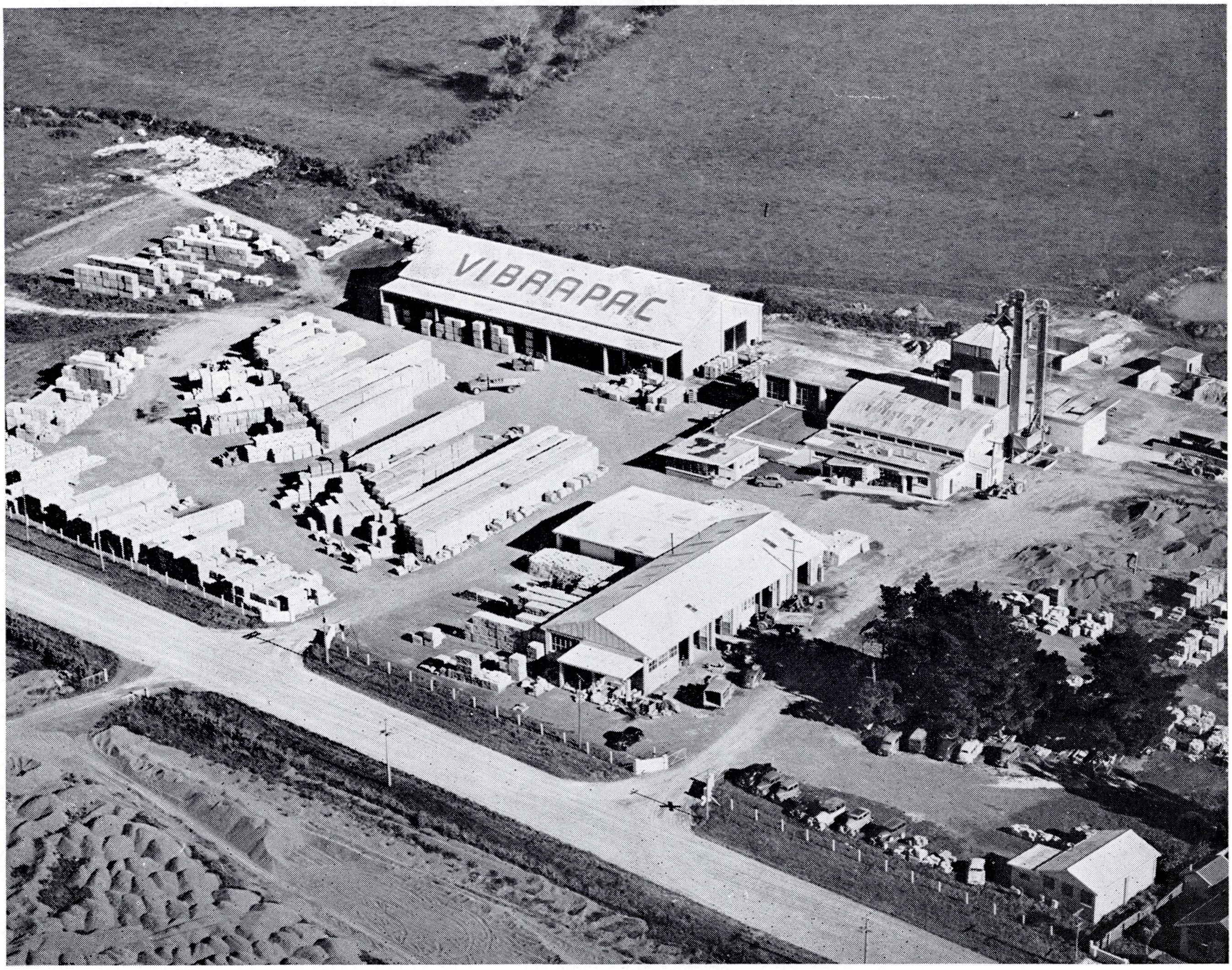
It is the considered opinion of the manufacturers that the use of concrete masonry generally in New Zealand has only just commenced, and, in fact, its potential as a building material has practically no limitations. It is in the field of light industrial buildings that concrete masonry has had its biggest impact, but it is currently being used for housing, factories, schools, farm buildings and churches, where, with this material, it is possible to erect a permanent structure economically and quickly.

Imported from the United States, the machine on which the masonry units are made is the Besser Vibrapac V 3 R. It operates at various speeds up to 5 1-3 cycles per minute, i.e. 16 blocks 16in. by 8in. by 8in. per minute. The plant uses approximately 100 yards of shingle per eight-hour day, and approximately 12 tons of cement, depending on the type of block being manufactured.

Quality complies fully with N.Z.S.S.

Careful laboratory checks ensure the quality of both the raw materials and the finished product, to satisfy completely the New Zealand Standards Institute requirements.

The Christchurch Company was founded in 1951, and, when operations were commenced the following year, 20 persons were employed; in 1959, 80



persons are engaged directly or indirectly in the Company's activities.

In addition to the different types of concrete masonry, the Company manufactures coloured split masonry units called Summerhill Stone, polished slab and Summerhill Stone fire surrounds, and polished concrete slabs.

The 'Glamour Product' of Vibrapac.

Summerhill Stone is the glamour product of the Vibrapac Factory. It is an attractive material made from the native pink marble of Canterbury, and Christchurch home-builders have taken it to their hearts. It can be found in houses in every part of the city, and the proportion of homes in the new subdivisions using Summerhill stone shows that it is gaining in popularity. Among the new houses in the better class area of Fendalton almost every second one has Summerhill Stone in it somewhere.

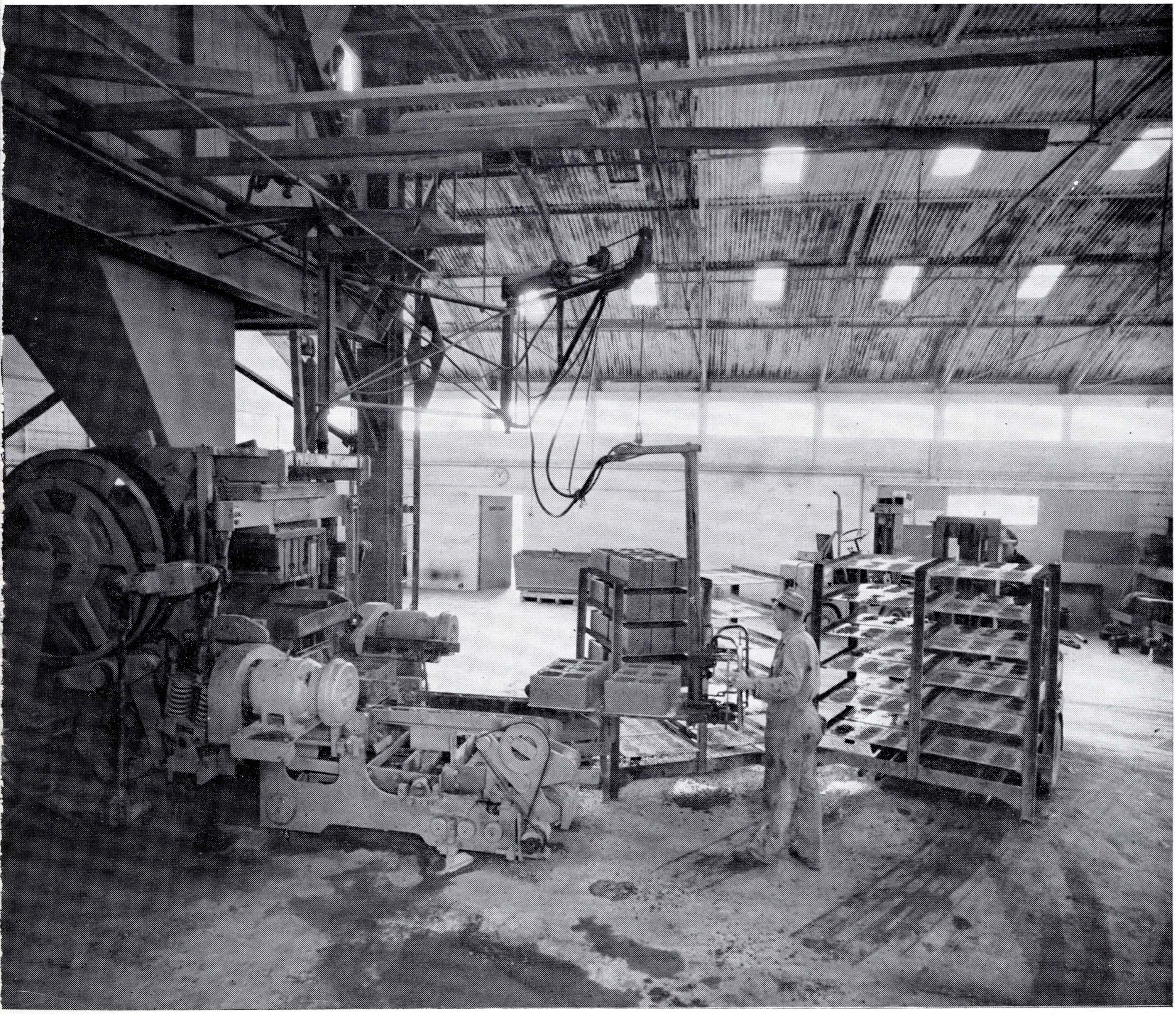
To the mushroom pink are added other tones.

In its "orthodox" state Summerhill Stone is the mushroom pink of the natural Hanmer marble, but oxides can be added to give all manner of different colours. Probably Summerhill Stone's greatest appeal lies in filling a need that has existed in residential and commercial architecture for a long time. No other material, apart perhaps from random natural stone, seems to provide that nebulous quality necessary for glamorous display type masonry.

The secret of the popularity of the stone is in the process introduced to this country by Vibrapac of splitting the blocks. Instead of the conventional smooth surface of clay bricks or the usual concrete block, the splitting produces a rough-hewn effect, which, for walling has an extremely dramatic effect.

But it does not stop there. Summerhill Stone is made from crushed marble. Two gauges of chips are used, plus a handful of marble dust and a special sand, together with cement. Once the solid

THE HUGE AMERICAN 'BESSER' BLOCK-MAKING MACHINE, showing operator with pneumatic 'take-off' for wet blocks.



eight-inch block has been made (in almost exactly the same way as the concrete block) and it has received its initial steam curing, the block is split, with a big mechanical knife.

And so the rugged surface is produced. The fracture actually cuts the marble chips so that the surface incorporates freshly cut faces of natural pink marble. When oxide has been added, the marble retains its original colour, with the result that an added mottled effect is produced.

Weather Resistance

The claim of the Vibrapac Company is that with a surface consisting partly of cut marble, the blocks have an extremely weather-resistant quality.

An added effect of ruggedness can be obtained by chipping the blocks further. Perhaps for a revealed interior wall of a living room or an extended fireplace surround, the edges of the blocks are bolstered off and the joints between the stones are pointed in black or white. The ornamental stonework thus achieved is novel and extremely charming, especially to a visitor who has not seen this effect before.

Other services.

The Company actively quotes for the supply and erection of its own products in competition with its distributors, who also run a similar service. In order to do this, the Company employs a quantity surveyor to quote on contracts, and 30 skilled blocklayers to execute the contract work it secures. The effect of this service has been to keep building costs down.

(Upper) CONVEYOR BELT, fed by pneumatic 'tongs', used on the inspection line.

(Lower) TEST TO DESTRUCTION: Crushing a block in hydraulic press to ensure greater strength than that required by the N.Z. Standards Institute.

Area of operations.

The Christchurch Company sells its products over much of the South Island, notwithstanding the incidence of the high cost of freight. It is prepared to send men to erect its products anywhere. Orders have recently been forwarded to the North Island, and there are regular customers for Summerhill Stone in Wellington, Carterton and Masterton.

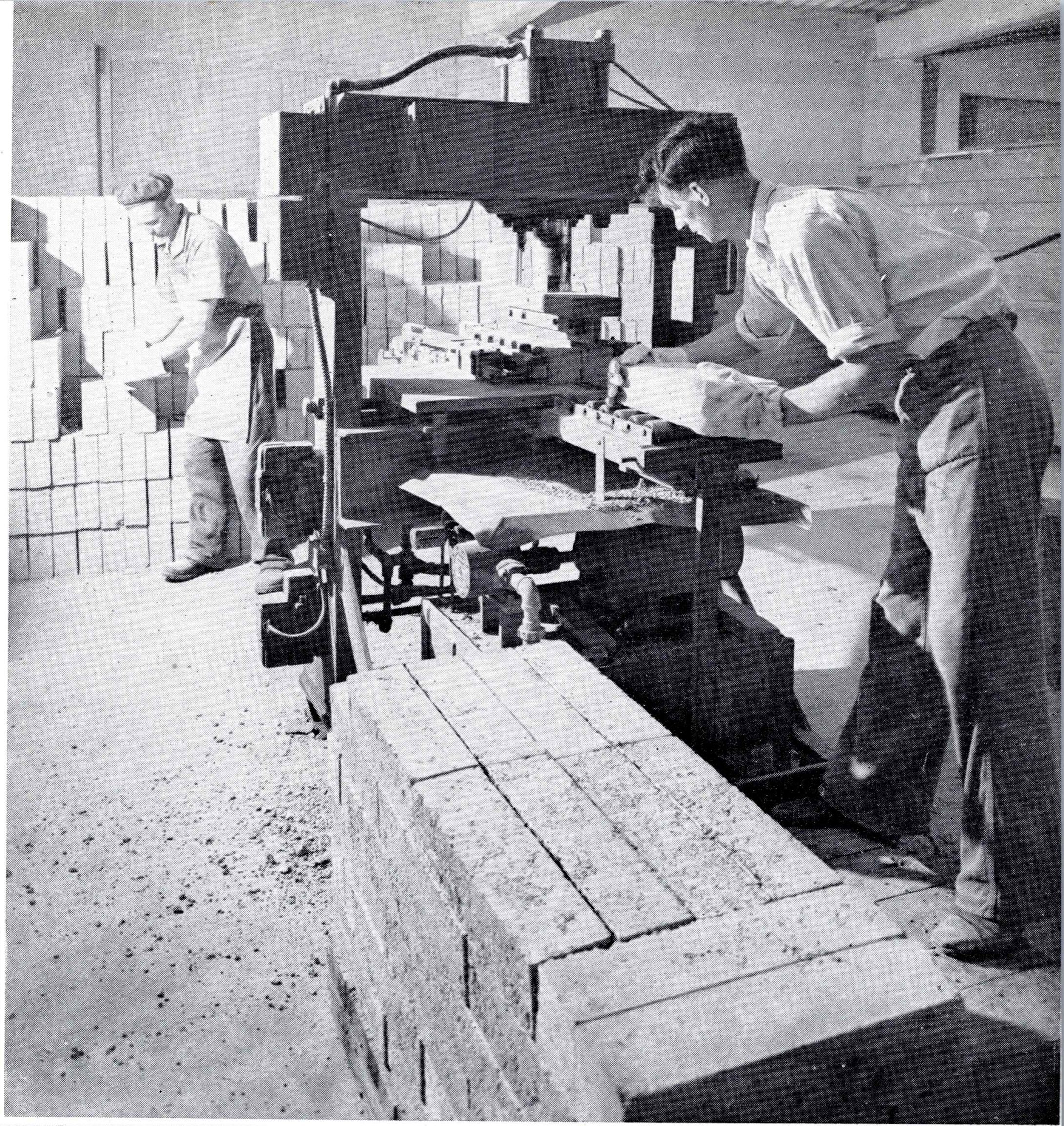
Board of Directors: Neville Vincent (Chairman), J. L. Hay, T. L. Uren, F. Nicholls. **General Manager,** J. D. Broome, A.M.I. Struct.E. **Technical control:** G. M. Jones, B.E. (Hons.), A.M.I.C.E., A.M.N.Z.I.E., (Promotional Engineer); **Plant Manager,** C. D. Bailey.

VIBRAPAC (OTAGO) ACTIVITIES

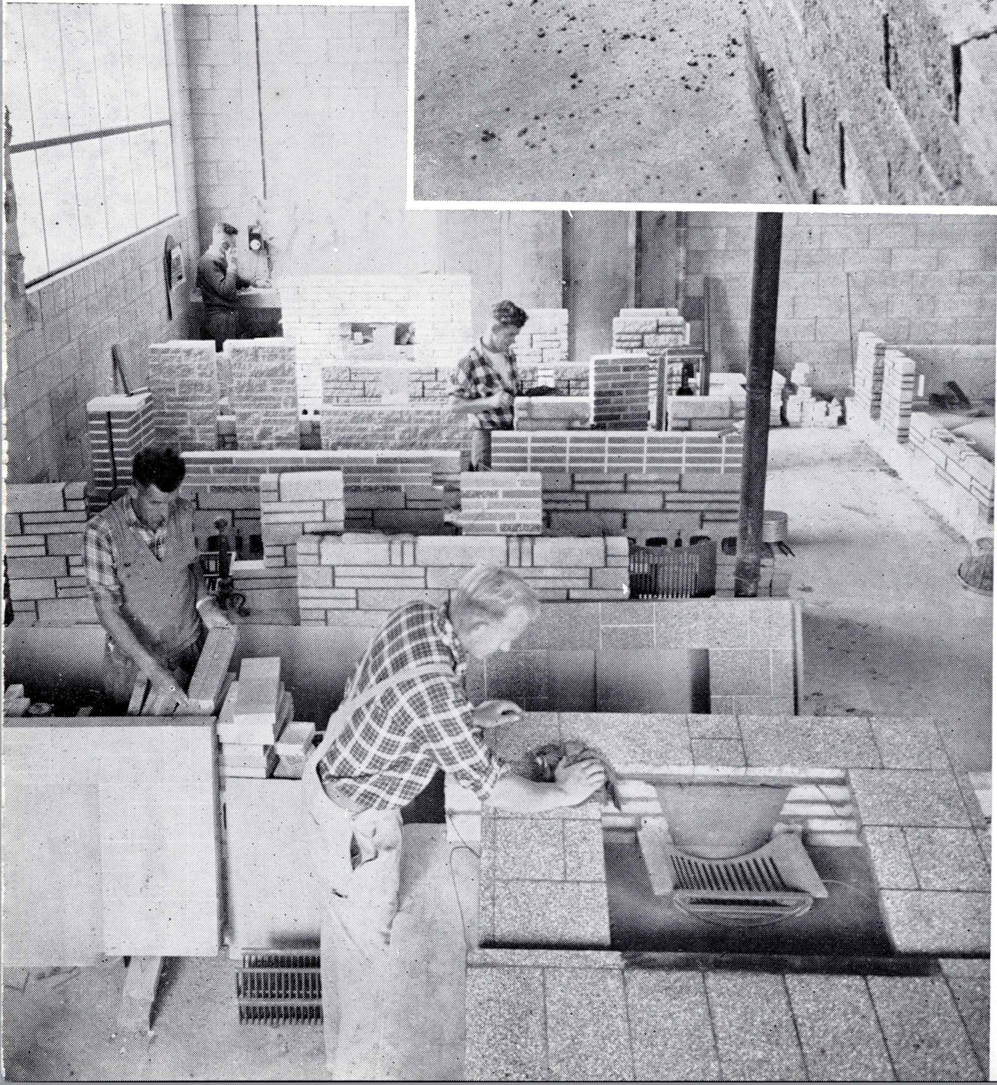
The rapid success and experience of Vibrapac in Christchurch led to the establishment in 1958 of the Dunedin counterpart, at Green Island. The latest model Besser block machine was imported together with ancillary equipment, and set up under the supervision of the Christchurch engineers.

A key executive from the older company (Mr. John McNulty) is now General Manager in Dunedin. The Chairman (Mr. Neville Vincent) and two other members are common to both Boards of Directors. Vital quality control of the product is shared, plus test and other facilities. Similarly, marketing and advertising policies are integrated.

With this backing of brains and experience, together with the great need for high quality concrete masonry in Otago, Vibrapac in Dunedin has a rosy future. Production is well established, quality is proven, and the appearance of the masonry is first class. The stage is set for another Vibrapac success story.



THE HYDRAULIC SPLITTER-KNIFE, splitting coloured concrete (with special aggregate) to form Summerhill Stone.



FIREPLACE DEPARTMENT: A corner showing the assembly line. With an increasing demand for fire surrounds made from Summerhill Stone, this is an expanding department.

BP Serves New Zealand well

BP (NEW ZEALAND) LIMITED

Head office : Wellington Branches : Auckland, Wellington, Christchurch, Dunedin

On December 19, 1946, less than 18 months after the end of the war in the Pacific, the British Petroleum Company of New Zealand Limited was registered. The capital was jointly subscribed by the Anglo Iranian Oil Company Limited (later re-named The British Petroleum Company) and the New Zealand Government. Subsequently, the Government sold its shareholding to the partner and the New Zealand Company thus became a wholly owned subsidiary.

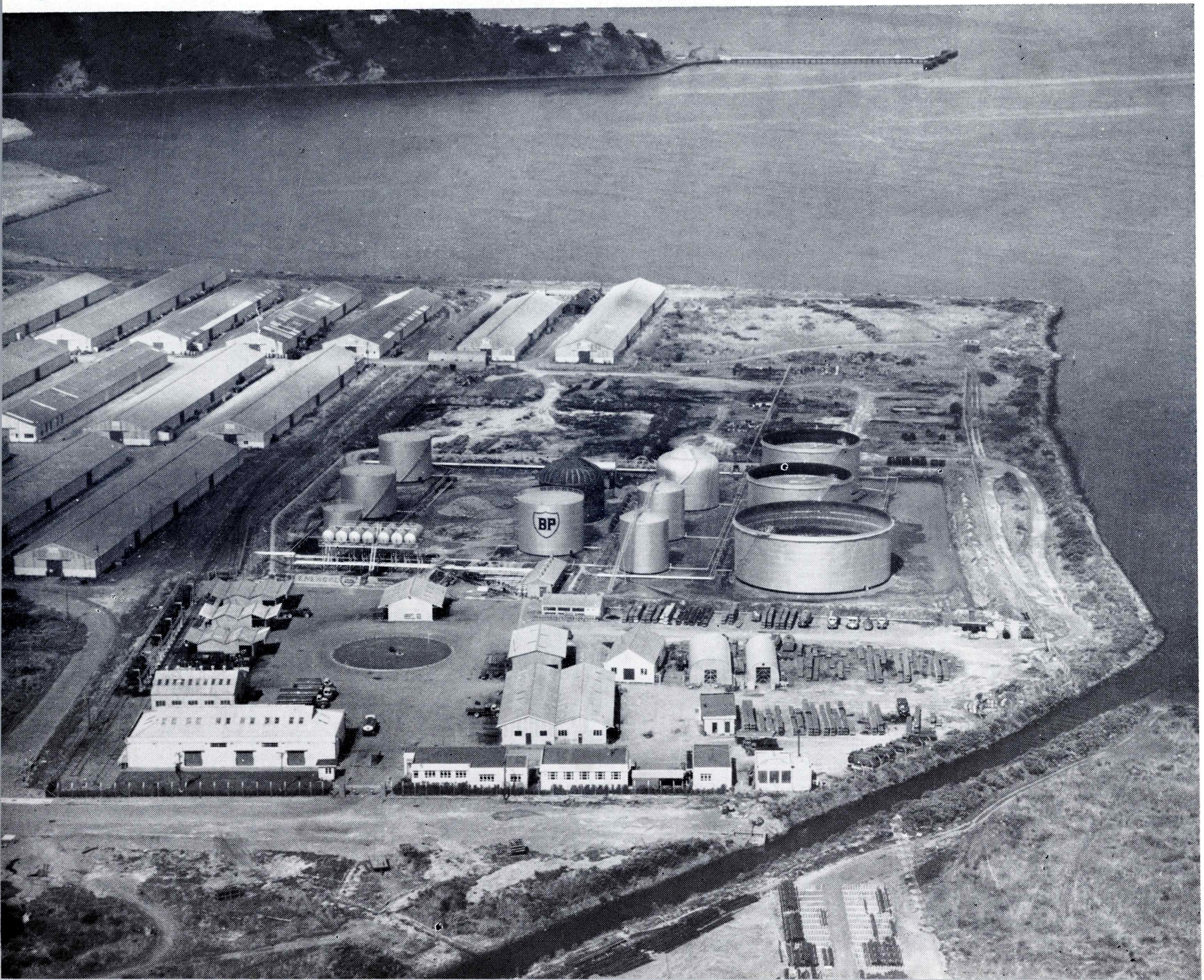
As was to be expected from the child of such an illustrious parent, BP has forged ahead, and, in little more than 10 years, has emerged as a major marketer of petroleum products in this Dominion. In keeping with Group policy, the name has since been changed to BP (New Zealand) Limited. The Company is now under the management of Mr. L. G. Hucks, who took up the appointment in April, 1954, in succession to Mr. R. W. W. Turner, whose predecessor was Mr. G. H. James.

Shortly after its inception, BPNZ was in business supplying the New Zealand Railways with fuel for its oil burning locomotives.

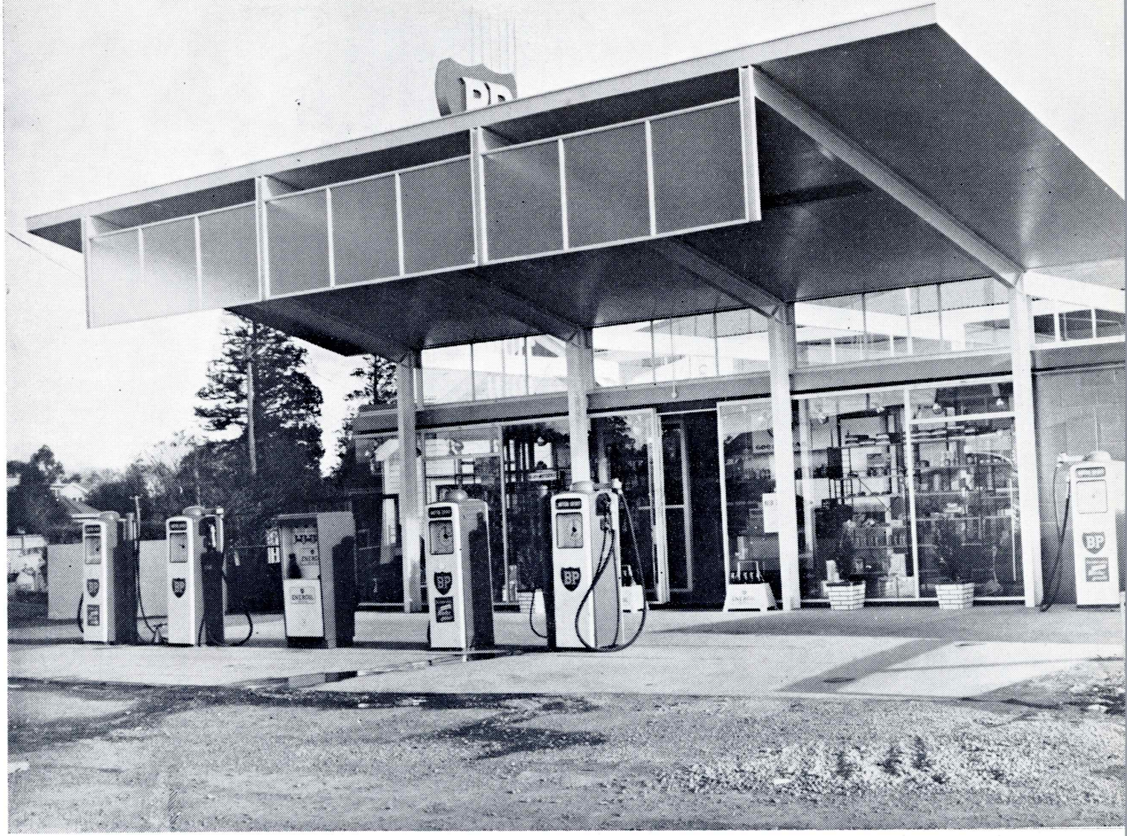
Meanwhile, preparations for the reception and distribution of other products went ahead, and, in 1949, BP petrol was offered for the first time on the New Zealand market. Organization and administration have kept pace with market developments, and the Company is controlled from a head office situated in Wellington. Local control is vested in four branch managers, one in each of the four main cities. Within these branches, local marketing and distribution centres have been established in key provincial towns and cities.

Distributors of hundreds of products

Recognising that products must be delivered to the consumer at the point where he requires them, the Company set about establishing the complex organisation required for the purpose. Products imported for New Zealand needs range from aviation spirit and turbine fuel through petrol and diesel to fuel oil, lubricants and bitumen. Within these major groupings are many lesser divisions, and the Company offers the



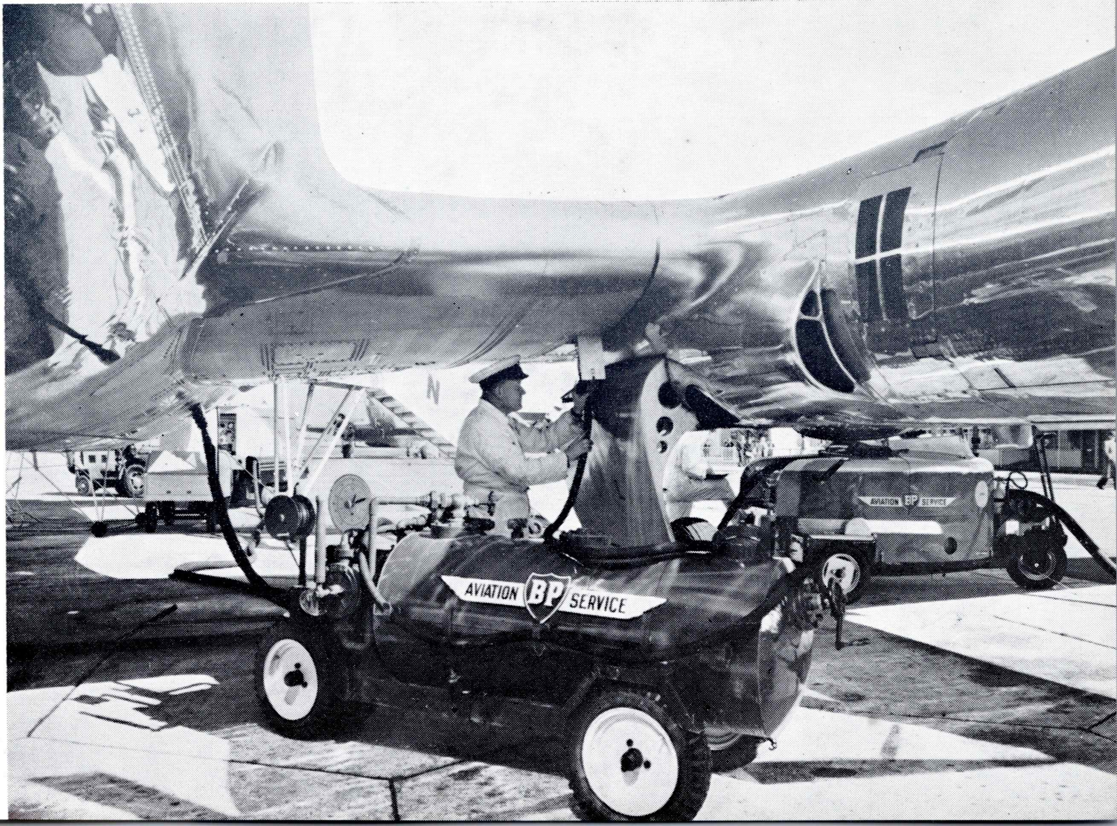
BP's ocean terminal at Wellington.



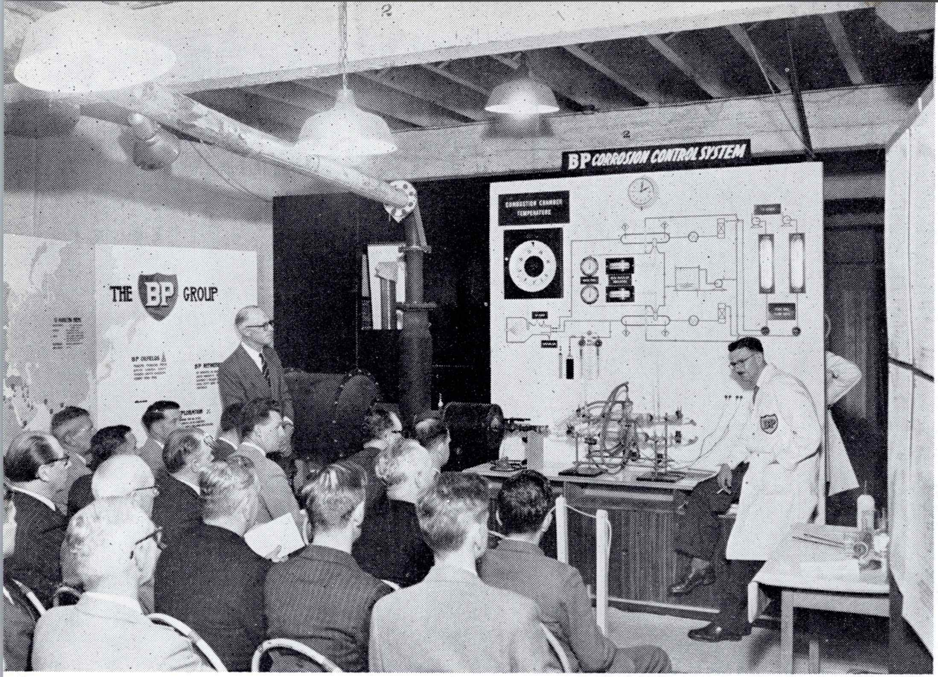
MODERN BP SERVICE STATION designed to offer every service to the motoring public: Fendalton Service Station, Christchurch.

New Zealand consumer some hundreds of separate products.

New Zealand is geographically remote from the world's main oil producing fields at present, but the nearest BP refinery in the Group's world-wide network is Kwinana in Western Australia, only 3,000 miles away. The country's geography and natural features which lend such charm to the landscape were never devised for the easy internal distribution of goods and produce. In compensation for the inland obstacles to the ready movement of surface transport, parts of the coastline are plentifully endowed with natural harbours. Where the coastline is less hospitable, New Zealand enterprise has remedied deficiencies left by nature and ports have been established through which a flourishing trade is now channelled. BPNZ, supported as it is by The BP Tanker Company, which owns the world's largest fleet of merchant vessels sailing under one flag, was well placed to exploit New Zealand's port facilities. BPNZ has no less than 10 ocean terminals, from which its products are distributed direct to consumers or to inland depots, from which local distribution is carried out.



AVIATION SERVICE: Refuelling a Viscount aircraft of the National Airways Corporation at Auckland. BP Aviation service is the sole supplier of aviation gasoline to the Royal New Zealand Air Force.

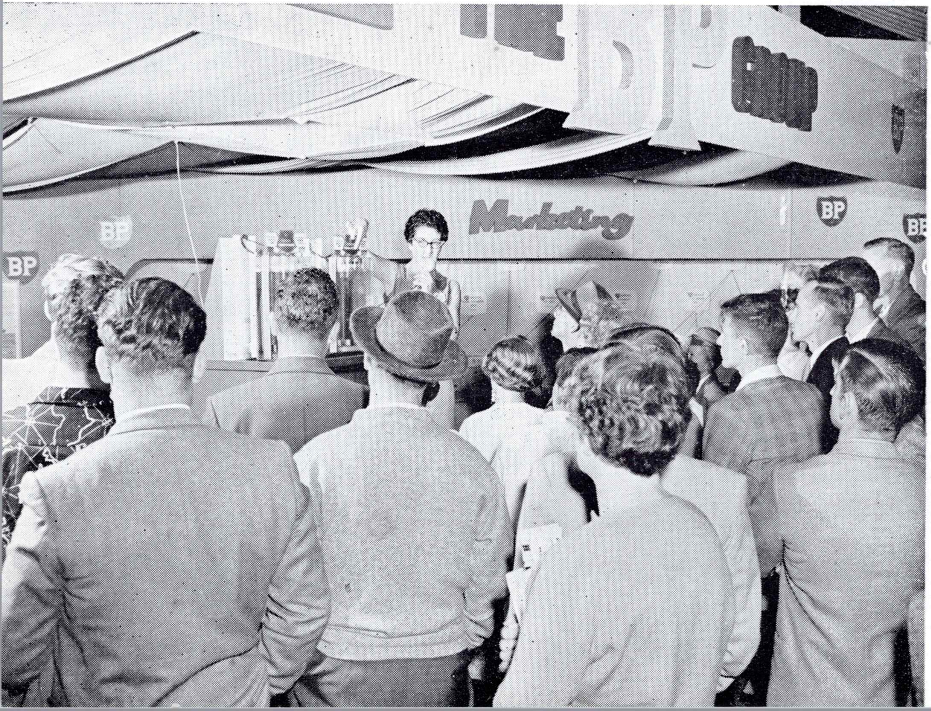


BP PATENTED SYSTEM OF LOW TEMPERATURE FLUE GAS CORROSION CONTROL. Photograph shows the demonstration unit at the Industrial Development Laboratories, Auckland. For one week demonstrations were held twice daily at this venue for business executives, engineers, and students from the Engineering School at Auckland University. The principal speakers were (left) Mr. B. G. Voisey Fuel Oil Manager, and (right) Mr. G. E. Rushworth, Chief Chemist, both of BPNZ.

MR. L. G. HUCKS, O.B.E., Managing Director of BP (New Zealand) Ltd.

Marketing: Interpreting needs, satisfying wants

It is not the function of a distributor to confront his market with goods which the consumer does not want or cannot use. The distributor's purpose must be to interpret the needs of his market and satisfy those wants. The applications of petroleum products to industry and agriculture are legion. New applications and superior products for these applications are continually emerging. BPNZ is backed by the facilities of The British Petroleum Company Limited's vast research establishment at Sunbury in England. Here, in the English countryside on the upper reaches of the Thames, a large staff of highly qualified chemists and engineers is engaged in continuous research into the needs of aviation, agriculture, the motorist, the industrialist, and every other potential petroleum user. From Sunbury in recent years have come developments on such diverse subjects as low temperature corrosion control in oil fired boilers, vapour lock in the petrol system of motor vehicles, new formulas for superior lubricants, and other kindred developments. For the interpretation of these projects to New Zealand industry, BPNZ employs a staff of qualified technical men, who are available to advise New Zealand consumers on their problems. It is the Company's



DISPLAY UNIT AUCKLAND EASTER SHOW, 1959: BP had on display three dioramas depicting oil exploration, transporting and refining, a 20-ft. model of a diesel locomotive factory, and the Visco-Static Three Ball Apparatus. Films were shown at regular intervals. Photograph shows Miss Anne O'Donoghue, of BPNZ Public Relations Department, demonstrating the Visco-Static Three Ball Apparatus.

LIMITED

FIELD HEADQUARTERS AT GISBORNE OF BP SHELL & TODD PETROLEUM DEVELOPMENT LTD.: Miss Akers, a tracer, at work compiling a map showing the geological contours of an area from information supplied by BP's geological field teams.

aim that the customer should obtain the last pennyworth of value from the products he purchases. A full laboratory service is maintained in Wellington to assist in this work.

It is not sufficient, however, to advise on applications unless products are available where needed in the right quantity, and in packages and containers suitable for the customer's needs. BPNZ stands behind the businessmen who re-sell BP products. Petrol stations and garages are freely offered advice and encouragement in the successful marketing of petroleum products, without which a satisfactory service to the motorist cannot be maintained. There are those who buy on the reseller's premises, and those who wish to have their products delivered to their own. The farmer may want a bulk tank for diesel fuel, or a convenient container for his lubricating oil. With this in mind, BPNZ has pioneered the development and introduction of plastic bottles for lubricating oils, 5-gallon cans with taps for the storage of products in small quantities, and other similar innovations. All these are designed to help the user meet his needs with the maximum convenience possible.

Rapid development in aviation services

The post war years have seen the rapid development of aviation services for all sections of the community. Passenger traffic and air freight consignments have grown at a mushroom rate. Along with these has sprung up a new and flourishing industry in which New Zealand can justly claim to have led the way: aerial topdressing has brought into full production millions of acres of back country pasture which hitherto was unproductive. The aerial agricultural contractor carries on his work under conditions which are often hazardous and almost always difficult. Operating from small airstrips in difficult country and remote locations, these contractors must take advantage of every daylight hour in which the weather is favourable if the farmer is to have his fertiliser spread successfully. If conditions do not permit operations in one locality, they may be more favourable a few miles away.

On most of the airfields of New Zealand may be seen "Air BP" at work, refuelling piston and jet aircraft alike. Our gallant Air Force continues to spread its wings, powered by our fuel and lubricants. Our subsidiary company BP (South West Pacific) Limited, which is incorporated in Suva, concerns itself with extending our aviation service to all parts of the South Pacific area, to both military and civil aircraft.

Wherever the aviation operator is at work, his fuel must be available. BPNZ stands behind this service, which is aimed at boosting primary production and the raising of New Zealand's export earnings.

Ceaseless search for Oil

Ever since the first discovery of oil in Persia in 1909, The British Petroleum Company has carried on a ceaseless search for oil throughout the world. As long ago as 1926 the first BP oil reconnaissance was carried out in New Zealand. Twelve years later in 1938, these efforts were renewed without success. Again in 1950, Company geologists carried out further investigations, and reported on these to the Government of the day.

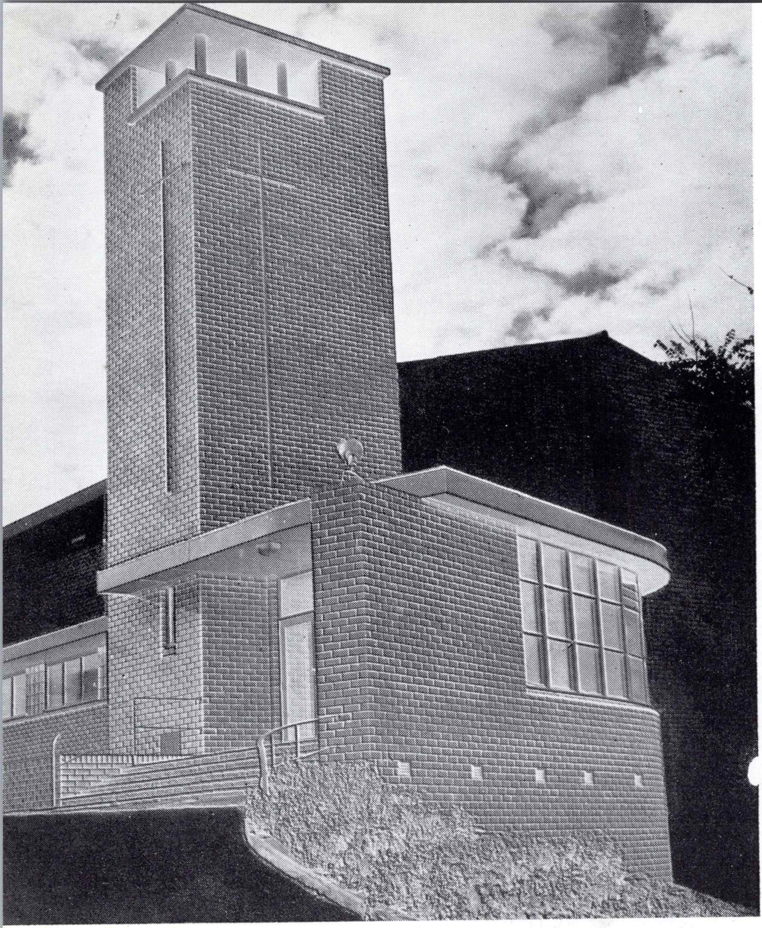
In 1957, BP was back again, and is now engaged in the most intensive oil search ever carried out in New Zealand—in the Taranaki and Gisborne areas, with partners, and on its own in the Marlborough Province.

Bunkering

We, as a nation, are greatly dependent on overseas trading, and consequently a large number of ships are handled by our ports. Here may be found the BP Bunkering Service, providing all manner of marine petroleum products to overseas and coastal vessels. Long before BPNZ was operating in this country, the Group was supplying a bunkering service through its agents, the Union Steam Ship Company Limited.

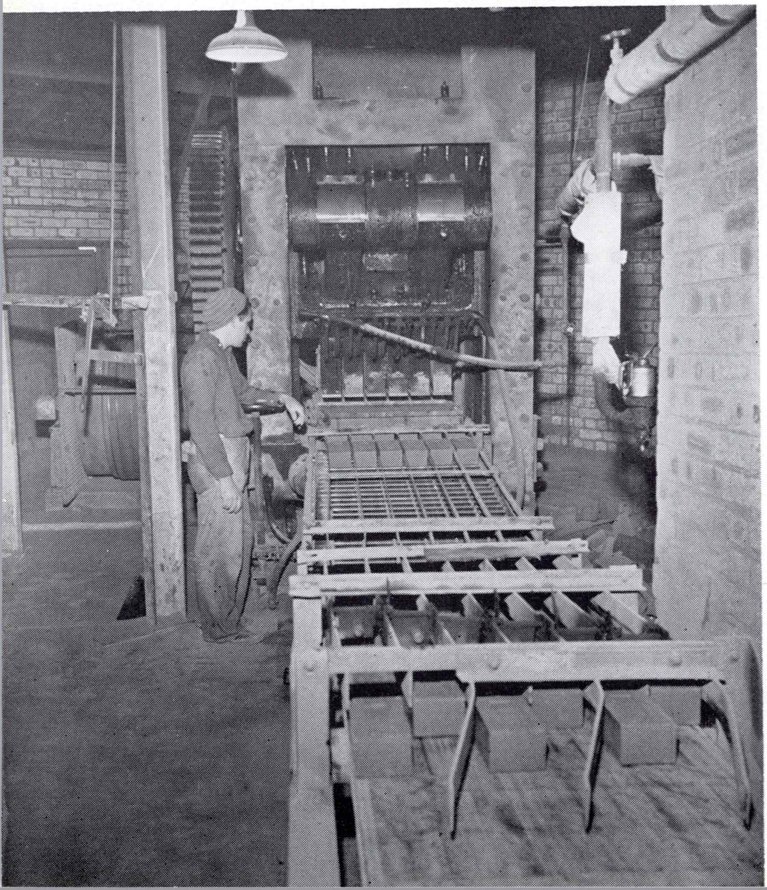
The British Petroleum Company, with its subsidiary and associated concerns, forms the BP Group, which is one of the major units of the world petroleum industry. It explores for, produces, refines, transports, distributes and markets petroleum products. Its principal sources of crude oil production are in the Middle East. Through its prospecting subsidiary, the BP Exploration Company, it is interested in oil bearing territories in a great many parts of the world. The Group operates refineries in Great Britain, Australia, Aden, France, Belgium, Italy, Germany and Israel. For sea transportation its shipping subsidiary, The BP Tanker Company, operates the largest fleet of ocean going vessels under the one house flag.

The BP Shield is the symbol of the world-wide organisation THE BP GROUP.



A MODERN DESIGN of church constructed in Huntly facing bricks.

AMERICAN INTERNATIONAL BRICK PRESS with an hourly output of 3,600 semi-dry pressed bricks. The machine exerts a pressure of 1000 tons spread over the six dies.



For longer than half a century,
been made
THE HUNTLY BRICK

Early records show that bricks were first made on the present property in the 1890s, but The Huntly Brick and Fireclay Co. Ltd. was not established until 1907.

From a single kiln with an output of 350,000 per annum, the plant passed through several recognised stages of development until, in 1921, the first gas-producer fired chamber kiln in Australasia was installed, yielding a yearly output of 2,500,000 bricks. The plant of the 1950s consists of a mechanised clay-pit system, modern presses, and a continuous gas-fired tunnel kiln, with a rated output of 5,000,000 but now regularly producing 8,000,000 bricks annually. Extended in a line, a year's output of bricks would stretch from Huntly to Sydney, Australia.

To the lay mind, a brick is merely a brick, differing only in colour; to the initiated, the differences are far greater. They include sound principles of manufacture and proved weathering qualities as the hall-mark of high-class production.

Briefly, how is a brick made?

Firstly, from nearby reserves of carbonaceous fireclay deposits, the overburden is stripped, and by the use of a hydraulic ripper the beds of tough fireclay are scarified. The material thus loosened is collected by carryall and conveyed to the stockpile. Five or six types of clays compound the mixture and are laid down in definite proportions, until the pile is high enough to be reclaimed by an excavator loading into a four-wheel-drive tipping truck of 5 cubic yards capacity.

The naturally moist clay mixture is charged into perforated-bottom pan mills, pulverised to a powder, screened and elevated to storage bunkers. A quantity of 150 yards of such material is so processed each day.

The finely divided clay is next pressed into the brick shape. Forming pressures over the six bricks pressed at the same time is of the order of 1000 tons. The American machine produces a brick a second, or 3600 per hour. Since the moisture content is relatively low (10 per cent), the pressed brick can be handled immediately and is set in regular pattern onto the waiting kiln cars or bogies. To complete the process, the bricks still standing on the cars are dried down to 2.0 per cent moisture and then baked, cooked or fired. As the cars are pushed along the dryer, they meet a volume of warm air, at an increasing temperature, collected as waste heat from the kiln system.

The cars of dried bricks are next charged to the firing chamber or Tunnel Kiln, as it is called. By the agency of a hydraulic ram, pressure is applied to the cars, so causing a gradual slow movement through the preheating section, to the full firing zone, and through to the cooling end.

To obtain the necessary temperature for firing, local Rotowaro coal of specially graded size is fed separately to a water-cooled gas-producer. About 100 tons of coal are consumed weekly for this purpose. The gas made in this manner flows from the producer through underground ducts, is mixed with secondary air, and burnt in the hot zone of the kiln. The maximum firing temperature is 1250 deg. C.

building bricks and firebricks have in Huntly.

& FIRECLAY CO. LTD.

Huntly

After four days, the raw and prepared clay emerges from the 225 ft.-long kiln as a finished brick, ready for sorting, grading, and despatch to the bricklayer. The drying and firing sections of the plant are in continuous operation night and day — for 11 months of the year.

Usage of the product

Some 6,500,000 of annual production is directed to the construction of homes, and for such applications as the walls of churches and many commercial buildings.

In the Bay of Plenty, the Waikato, and in Auckland and environs, the reputation of Huntly brick is self-evident, with its variety of creams, buffs and browns pleasantly flecked with ironspots. As a permanent building material, externally and internally, it has an architectural beauty that harmonises with the sunshine and climate of this part of the North Island.

Refractories, commonly known as firebricks

Perhaps the more important industrial aspect of brick activity at Huntly lies in the manufacture and usage of the 1,500,000 firebricks produced each year.

The uses of firebricks are many and varied, as indicated in the following incomplete list:—

Boilers of all types—marine and railway, water tube, horizontal return tube, vertical, flash steam generators, etc.
Heat treatment furnaces associated with the metal trades.
Cupolas and converters.
Kilns used for firing bricks, sewer pipe, sanitary earthenware, rotary kilns for lime and cement, for timber drying.
Incinerators for saw-dust and waste paper.
Tar boiler linings—gas producers, bakers' ovens, glass works furnaces.
Fireplaces and space-heater linings.
Chimneys—domestic, hospital, and cement works.

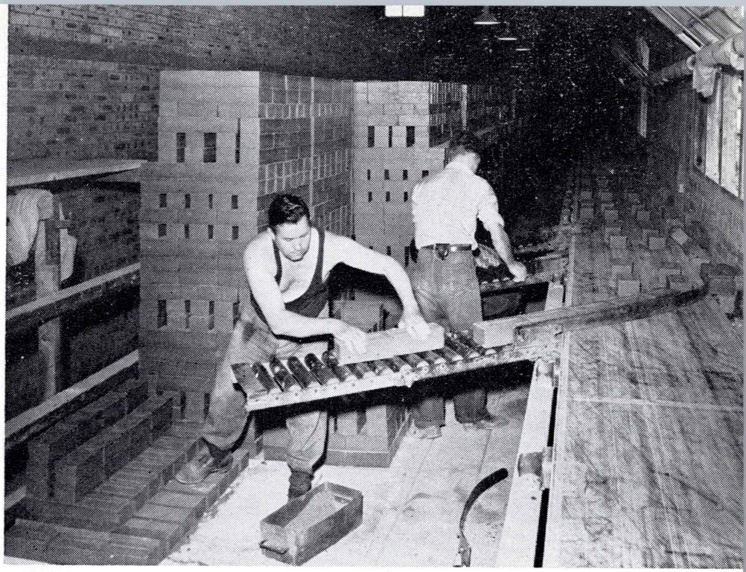
The Company offers a distinctive service in design data and in the usage of its Refractory products.

Research and development

It is established Company policy to conduct research and apply technical factory control.

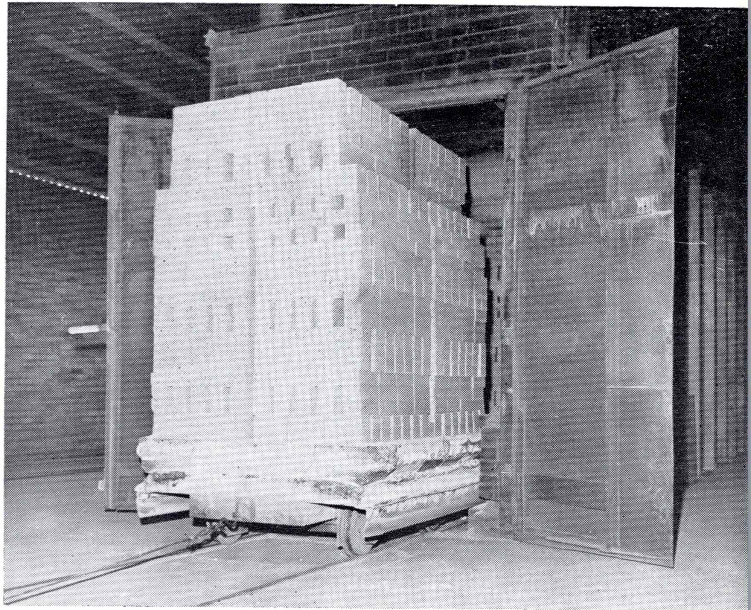
By the payment of an annual levy of £5 per employee (total staff now numbers 50), the Huntly Brick and Fireclay Co. Ltd. supports, and joins with, other heavy clay product manufacturers in the activities of the New Zealand Pottery and Ceramics Research Association. The Ceramics section of this organisation covers chemical, physical and scientific aspects of raw materials processes and products. Heat and production engineering concerns drying and firing, and a third department deals with aspects of building design and construction to extend the use and development of clay products.

It is agreed the world over that no material replaces brick as a permanent, low-maintenance-cost building material. The Company therefore plans to expand its manufacturing capacity in the immediate years ahead.



THE PRESSED BRICKS coming from the machine are conveyed and set on cars, each car holding 2000 bricks.

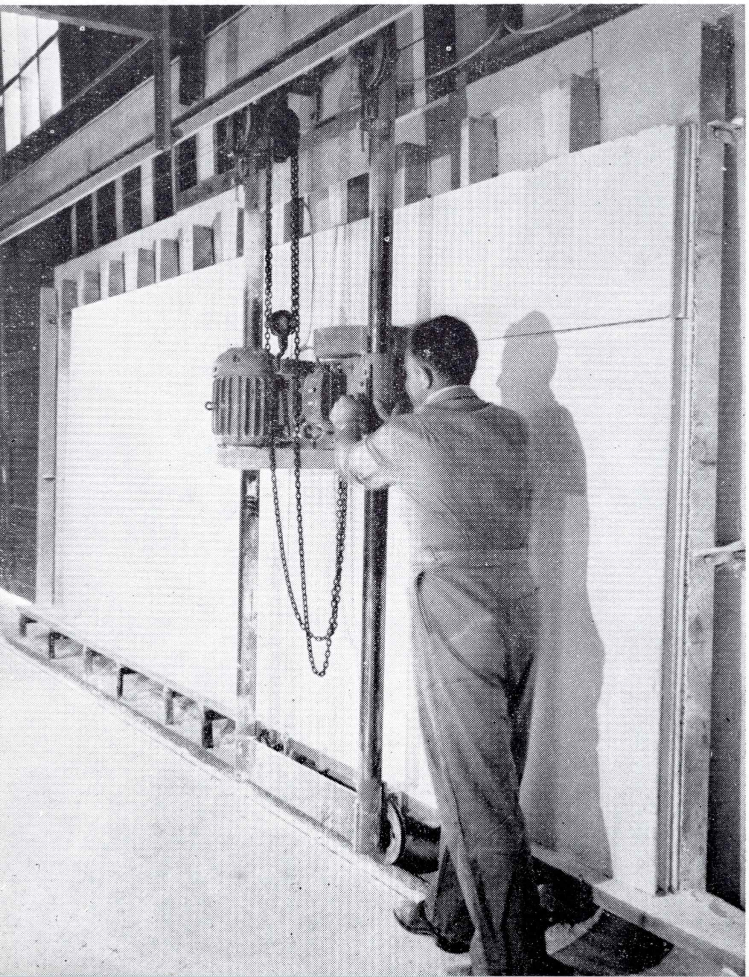
PASSING THROUGH the 225 ft. long tunnel kiln, the brick emerges as a finished product, having spent approximately 60 hours in the kiln.



IN THIS PICTURE the bricklayers are finishing the reconstruction of the firing arches to a high temperature kiln using Huntly firebricks. At a temperature of more than 1300 deg. C, the anticipated life is 10 years.

FOUR GENERATIONS IN THE PLASTERING INDUSTRY

FOUR GENERATIONS: (top left) William Wilkins (founder); (top right) his son, William Wilkins; (centre) William Edward Wilkins; (bottom left) present managing director Thomas McKay Wilkins; (bottom right) Harold William Wilkins, director.



Four generations have made the name Wilkins synonymous with fibrous plaster in New Zealand

WILKINS '*CONTINUOUS*' WALLBOARDS LIMITED

92 Fitzgerald Avenue, Christchurch
Also: W. Wilkins & Sons Ltd, Westminster Cement Products Ltd

The Company Wilkins "Continuous" Wallboards Limited had its beginnings in the middle of the last century. At that time, Mr. William Wilkins left his father's plastering business in Birmingham, England, and sailed for New Zealand to work as a plasterer on many early commercial buildings.

The plastering industry was later to see his eldest son, also William Wilkins, commence in the same industry about 1890. This Mr. Wilkins continued working in the industry until his eldest son, William Edward Wilkins, started a contracting business on his own account at the time of World War I.

Mr. William Edward Wilkins was responsible for the plastering work on a great number of today's commercial structures in Christchurch, including many of the picture theatres and churches.

The two present company directors, Thomas McKay Wilkins and Harold William Wilkins, took over from their father, William Edward Wilkins, in 1942, and registered their plastering company as W. Wilkins and Sons Limited in that year.

This concern has now been in the fibrous plaster industry for over 40 years, but today is concerned mainly with the operation of a contracting service. For the last 10 years it has been the biggest contractor of this kind in New Zealand. To manufacture fibrous plaster a large company was formed in March, 1956, registered as Wilkins "Continuous" Wallboards Ltd.; it commenced operations later that year. It has a capital of £75,000.

W. Wilkins and Sons Limited is the experimental company where new lines are tried before handing over to the associated companies, one of which is Westminster Cement Products Limited, which commenced as an off-shoot of Wilkins and Sons Limited in December, 1953.

In 1953, at the invitation of Australian Plaster Industries Pty. Limited, Thomas McKay Wilkins visited Australia to study the advanced methods of fibrous plaster manufacture in that country. Later, Harold William Wilkins followed to Australia to finalise details of the present new Fibrous Plaster Factory.

The Fibrous Plaster Wallboard section of the business was greatly extended after the registration of Wilkins "Continuous" Wallboards Ltd.

This Fibrous Plaster Works covers a total factory area in excess of 30,000 square feet, and is the largest plant in the Dominion. The plant, including drying tunnels, was designed in Australia and is the most up-to-date in the Southern Hemisphere. The new factory building was designed by a local architect.

Over the last 10 years, the Company has completed Fibrous Plaster contracts on most of the hospitals, public buildings and schools of a larger type throughout the Canterbury area. Major contracts include: Christchurch Railway Station, Christchurch Airport, Harbour Board Building, Canterbury University Buildings, Ilam Road. The Company has performed work as far afield as Palmerston North in the North Island, and Dunedin in the South Island.

(Left) **ONE OPERATOR** with a horizontal multiple cutting saw handling sheets of fibrous plaster over 20ft. long.

WILKINS CONTINUOUS WALLBOARDS LIMITED
FIBROUS PLASTER SHEETING
CLASSIC ORNAMENTAL CEILINGS
Wilkins
EMALUX-CORRALUX
GUNAC

SOME OF THE VEHICLES in the Wilkins fleet.

The word "continuous" adopted by the Company is descriptive as a name in that the sheets are placed on walls in a horizontal manner, not vertically as with other wall linings. The sheets actually span from one corner of a room to the other. These sheets have been manufactured up to 25 feet long, and Wilkins is the only organisation in New Zealand producing wall linings on this method, although most of the larger Australian companies produce on this system.

The sheets are transported in steel tripods on long-decked motor vehicles. Four men are employed removing the sheets from the truck to the job, and they carry the sheets with the aid of specially designed steel hooks and clamps.

In the Fibrous Plaster section it is possible for the Company to measure a residence to be lined in fibrous plaster at 8 o'clock in the morning, manufacture the sheets to size, and be fixing and stopping them in the actual residence on the same day. This speed of operation is part of the success of the new factory set-up.

Special machines

There are two main factors which make Wilkins leaders in the field of fibrous plaster in New Zealand—the special drying tunnel where 45,000 cubic feet of air per minute is shifted in the drying process, and the tailoring out section where one vertical and one horizontal set of multiple saws will cut ten 20ft.-long sheets in one action.

Almost all of the skilled fibrous plaster staff have trained in the Company, most of them having been trained from apprentices. The Company employs approximately 12 apprentices learning the Fibrous Plastering and Acoustic trade, and, as these boys finish their training, they become journeymen in the outside contracting gangs and new lads take their place. Total staff exceeds 100 including the Contract Services.

Westminster Cement Products Ltd.

Westminster Cement Products Limited handles the fire surround section of the business, and also has agencies for a great number of home and commercial heating appliances.

It is remarkable that in a very few years of operation Westminster has become the largest supplier of fire surrounds for housing work in the Dominion. It caters for the supply of surrounds in English and New Zealand manufactured glazed tiles, natural cast and fabricated stones, slate, imported and local polished and sawn sand stones and brick work. The rapid growth of this Company ensures it a successful place in the business community.

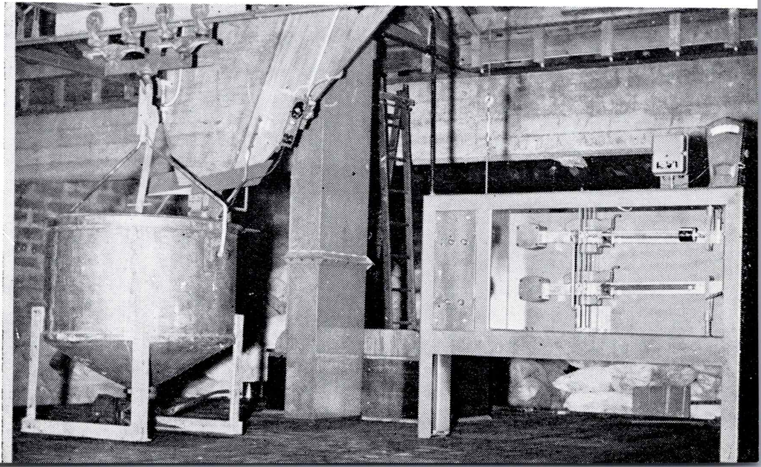
The acoustic section

Other developments of great interest are the Acoustic Section which for many years has obtained the larger acoustic contracts in the Canterbury area. New agencies here include a tile manufactured under Swiss royalties — "Echostop." Echostop ceilings can be made completely demountable. Acoustics is a very new field in New Zealand, and great developments are expected in this section of the business. Other agencies held are for Emalux and Corrallux processes, developed over the last 40 years in Holland. Now spread successfully throughout the rest of the world, these are highly decorative, glazed surfaces suitable for internal and external in-situ work. This material is to be used in the Harbour Board offices and in the Christchurch Airport, and is also used in many buildings throughout the country.

Another agency is Gunac bituminous waterproofing and decorative finish, which is particularly suitable for the resurfacing of existing commercial structures where deterioration is apparent on existing plastered surfaces. In addition to the large fibrous plaster factory at New Brighton, the Company manufactures surrounds on premises situated in Falsgrave Street, Christchurch, and also owns its office and showroom block in Fitzgerald Avenue, Christchurch.

Board of Directors of the group of companies: Thomas McKay Wilkins (chairman); Harold William Wilkins, Geoffrey Hamilton. These directors control the activities of the three Companies.

PLASTER AND WATER AUTOMATIC WEIGHING MACHINE, with the conveying bucket and overhead hopper, in the mixing bay of the sheet casting factory.



A Company geared to process any chemical formula

TRIMOL LABORATORIES LIMITED

71 Melrose Rd
Mt Roskill
Auckland

Aubrey Ashton Webster, a qualified pharmaceutical chemist, laid the foundation of this well known New Zealand manufacturing chemical business. He began by marketing one or two products purely as a side-line, when only 20 years old. But his unquenchable urge and interest in manufacturing led to the eventual floating of Trimol Laboratories Ltd. in 1947.

The Company concentrated originally on drugs and pharmaceutical products and was soon forced to seek larger premises. Cosmetix (N.Z.) Ltd., a firm which had for many years manufactured cosmetic products, had ample factory space available, and this Company was bought out and the two businesses amalgamated.

The new Company continued to make steady progress; each year saw an ever increasing range of products and the number of skilled technicians and Company-trained personnel rose accordingly. The old Cosmetix (N.Z.) Ltd. premises in Ponsonby soon became inadequate as a result of the Company's rapid growth.

MR. A. D. COLLINS, M.Sc., A.N.Z.I.C., at work in the Laboratory.

ZEST
Aero Blast
TRIMORT
ZEST

In 1954, a modern factory was erected on a 2½-acre site at Mt. Roskill. The premises have since been enlarged by three additions, with a total of 20,000 sq. ft., comprising factory and office space on the same level, and still leaving ample room for further expansion.

Range of products

The Company's activities now cover the manufacture and marketing of Cosmetics, Drugs and Pharmaceuticals, industrial chemicals, Aerosols, Insecticides and Agricultural products. This production and the Company's policy are guided and promoted by Aubrey A. Webster, M.P.S. N.Z., founder of the business and its present Managing Director; Geoffrey C. Laird, (Managing Director of the Auckland Drug Co. Ltd.) Director; Warwick N. Lattimer, Secretary; Matthew P. Hamblett, B.Sc., Assistant Manager; A. D. Collins, M.Sc., A.N.Z.I.C., Director of research and production; Ivor J. Davies, A.N.Z.I.M., Sales Manager in charge of sales staff covering the whole of New Zealand; Mr. Russell Parrish in charge of production, planning and control; and Mr. Owen Saunders, B.Sc., Factory Manager.

The Company has always placed special emphasis upon new developments. It was first in the field in New Zealand with such items as the use of D.D.T. in Insecticides, the establishment of the rapidly-growing Aerosol product industry, and, in point of fact, the Company was producing such items as Aerosol Insecticides in New Zealand on a plant designed and built to its specification some time before Aerosol products were manufactured in Australia.

With its specialty lines, the Company has set a very high standard — any product which it sells must be of the highest quality, as well as measure up to its every claim. Skilled technical laboratory staff maintain strict control in all processing, and research is continually being carried out with new lines. Consequently, this organisation has become the leader in its particular sphere, simultaneously enjoying excellent sales and an unsurpassed reputation throughout the Dominion.

Aerosol Packaging

Trimol Laboratories is the leading Aerosol packager in New Zealand, manufacturing and marketing "Trimort" Aero-Blast Insecticide, "Country Air" room deodorant, "Chef" Aerosol Oven Cleaner, "Suntex" Aerosol Suntan, "Dismist" Aerosol insect repellent, "Mamselle" personal deodorant, "Deb" Hair lacquer, "Aero-Kleen" Dry Cleaner, and many other lines such as Lubricating Oils, Plastic Bandage, Foot Spray, etc. All new developments in this rapidly expanding field are under constant review.

The Company had been well established in the Insecticide field prior to the advent of Aerosol Insecticides, and had an excellent market for its "Trimort" Liquid Fly Killer. With the coming of the 'push button age' it was decided to instal a plant and develop the manufacture of the Company's own Aerosol Insecticides. The original plant was designed by the Company's technicians, and built to their specification. These machines are still in operation today. However, as production

THE OFFICE AND FACTORY, situated on a 2½-acre site, with the building extremely well placed for both light and air.

requirements grew, the latest American cold filling and pressure filling plants were installed. Formulas are developed in the Company's laboratory, or alternatively the Company works under licence from overseas manufacturers.

Manufacturing facilities

The Company is well equipped to undertake all types of manufacture. Plant installed consists of Steam Pans, Homogenisers, Roller Mills, Mixers, Filtration equipment, Cone Mills, Hammer Mills, Pulverisers, Aerosol Cold Filling Plant, Pressure Filling Apparatus, Automatic Weighing Machines for handling of Powder products, Vacuum Filling Machines for bottling and capping machines and Tube Fillers, etc.

Manufacturing under licence

The Company is extremely interested in arrangements to manufacture and market overseas products, and it is prepared to give a full market report and a thorough investigation of any marketing possibility.

The firm is associated with several overseas interests, in particular the well known Pharmaceutical Company of Parke Davis & Company Ltd., for whom some products are manufactured under licence.

Australian branch

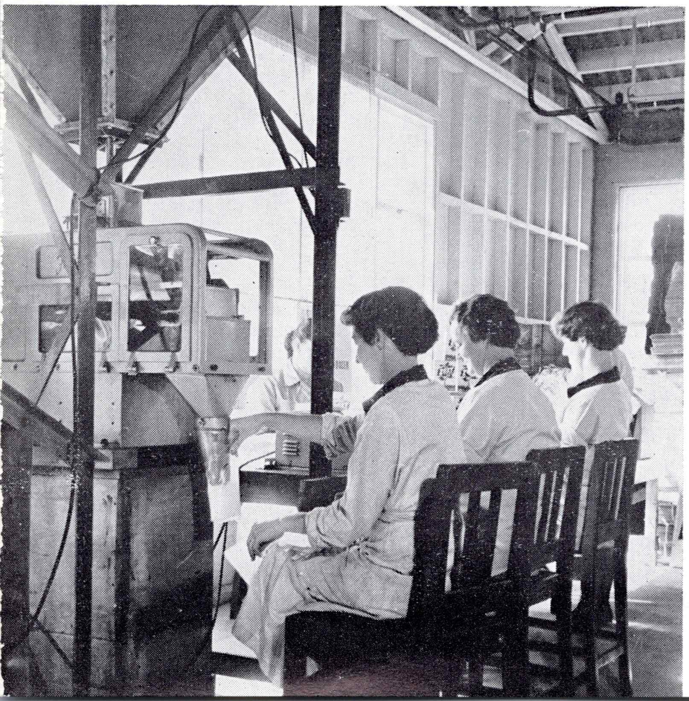
In 1957, the Company entered the Australian market and a branch office was established in Sydney. It now distributes some of its products throughout Australia.

Exclusive cosmetic distribution

During 1958, Trimol Laboratories Ltd. purchased the exclusive Cosmetic Company of Paul Duval (New Zealand) Ltd., and currently manufactures and markets a full range of Cosmetics which are distributed through the Chemists and exclusive Beauty Bars established in New Zealand's leading fashion stores. The Company is extremely interested in the Cosmetic and Toiletries field, and is seeking agencies either for importation or for manufacturing and distribution under licence through its existing well established outlets.

The rate of expansion of this New Zealand Company has been extremely rapid. This significant progress has been brought about largely through marketing only top quality products, and backing these products by aggressive selling and merchandising campaigns heavily supported by national advertising.

AUTOMATIC PACKAGING of New Zealand's most popular home garden plant food — ZEST. This is a view of an automatic fluid flow weighing machine fed by an overhead hopper, packing "Zest" at the rate of 12 bags per minute.

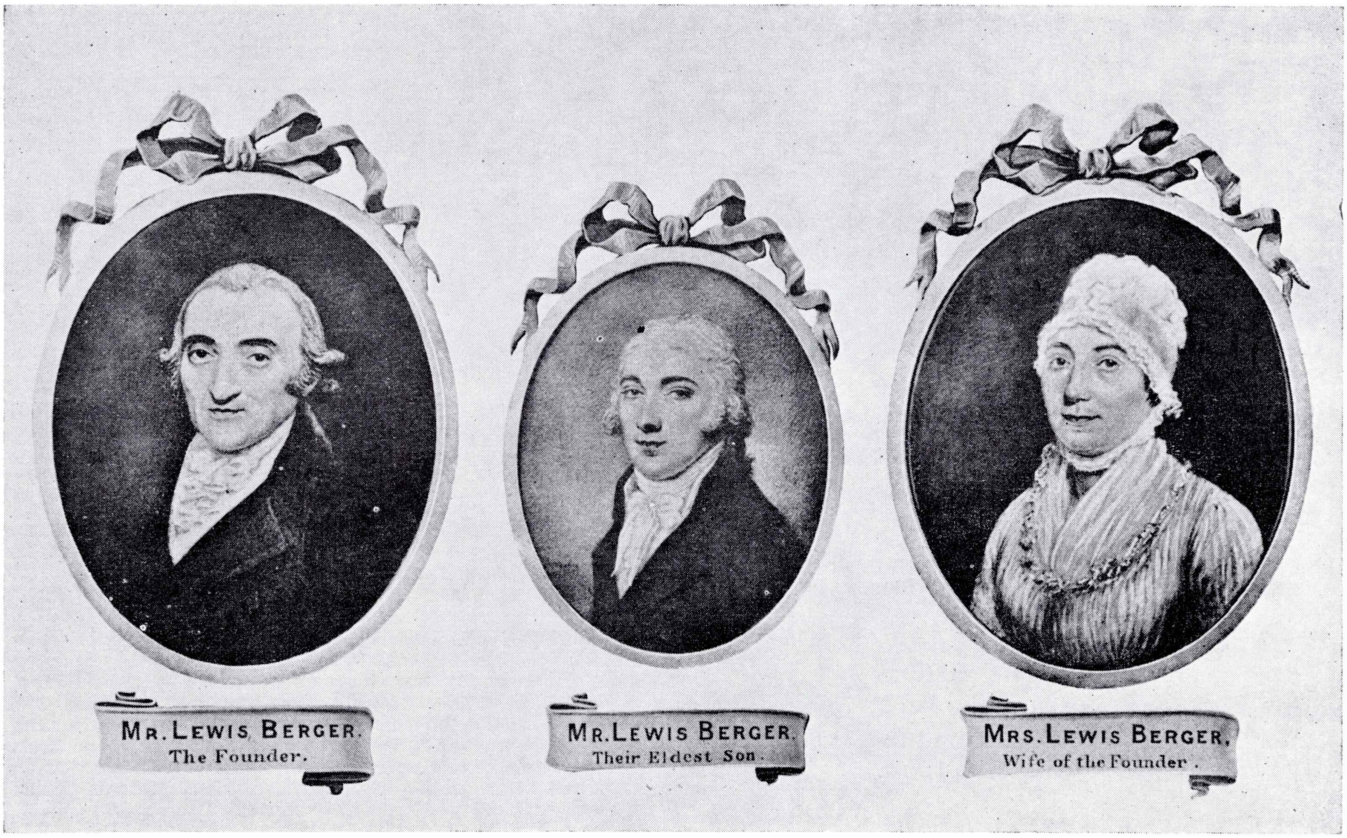


A WINDOW DISPLAY of the Paul Duval cosmetic products marketed by the Company.

paul Duval
paul Duval
PERSONAL BLEND FACE POWDER
Miss Mary Wallace
paul Duval
Miss Wallace will personally blend "Superglo" face powder to suit your complexion

A complete range of decorative and protective paints

LEWIS BERGER & SONS (N.Z.) LTD Torrens Terrace,


Mr. Lewis Berger.
The Founder.
Mr. Lewis Berger.
Their Eldest Son.
Mrs. Lewis Berger,
Wife of the Founder.

"Lives of great men all remind us
We can make our lives sublime,
And, departing, leave behind us
Footprints in the Sands of Time."

Since 1760, the House of Berger has produced the finest quality colours and paints. In that year, at the age of 19, Louis Amelius Christianus Adolphus Steigenberger, a colour chemist by profession, left Frankfort-on-Main for London to establish a small business. From this humble beginning was founded a mighty industrial empire which was to become a significant force in British trade, spreading to the far corners of the world.

Lewis Berger, as his Anglicised name became about the year 1770, had developed and perfected a method, new to the world then, of processing the dry colour Prussian Blue. He established his factory at Homerton, a tiny village on the outskirts of London in those days, and guided the destiny of his successful business until his death in 1814, at the age of 73.

The Berger secrets were jealously guarded and the legacy left by Lewis Berger, of which his successors are justifiably proud, is the fact that many of the "Fine Old Masters", particularly by Turner, have been produced and handed down to posterity with the help of Berger colour.

The sons of Lewis Berger, John and Samuel, expanded the Company's activities and are known for their contribution in developing the colour Vermillion, which became world famous, from a mercuric base. Some 70 years later, John's sons took over the business.

"Vi et Virtute"

In 1879, heavy capital demands forced the firm to become a limited liability company. Three of the Berger family appeared on the Board of Directors, with Arthur Berger as Managing Director. These members inherited the necessary qualities, coupled with adequate technical experience, to enable them to cope with every exigency. Above all, the principle that quality be upheld and retained was, and always will be, the watchword of the firm, and the new fields of trade were expanded in accordance with the family motto, "Vi et Virtute" —

> "And we must take the current when it serves,
> Or lose our ventures"

These words must most surely have inspired Arthur Berger. Under new conditions of free trade in Britain, the market was inundated by overseas competitors. Consequently, he decided to spread Berger's name and fame throughout the world. Soon branches were established in Paris, St. Petersburg, Vienna, Bombay, Canada and Sydney. Heavy American tariffs closed the door to this organisation's trade there. Mr. J. W. Garson, who succeeded Arthur Berger in 1894, reached a reciprocal agreement, however, with the Sherwin-Williams Company, the largest paint manufacturers in the United States and, in turn, assisted Sherwin-Williams in England.

Faith in the national and commercial future of New Zealand

The New Zealand story dates back to 1848 when the first consignment of Berger paint from London was shipped into Hokianga Harbour — consignee Mr. Frank Gould, late of the

Wellington Factories: Auckland, Wellington
Branches: Napier, Christchurch, Dunedin

Wairoa stores. Almost 70 years passed before direct representation was instituted to handle continuous shipments of paints.

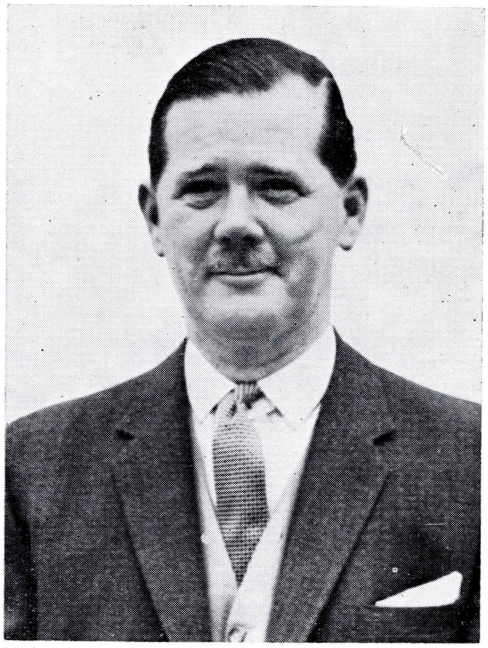
In 1900, the parent Company established trading connections within the Dominion. At first, shipments came directly from Great Britain but, with the erection of a factory at Rhodes, New South Wales, materials for New Zealand were received from Australia.

The pioneers of the subsequent Berger paint manufacturing organisation in New Zealand were Mr. J. R. Gillies, Mr. H. B. Sivier and Mr. J. T. Spears. The first registered office of the Company was in Mandells Building, Manners Street, Wellington. In 1922, premises were acquired in Hope Gibbons Building, Wellington, which provided for a factory, warehouse and office accommodation. A factory manager and an accountant were appointed from the Australian office to assist Mr. J. T. Spears, now Managing Director, in establishing the plant. Production commenced in January, 1923, and the New Zealand Company was fully registered in July, 1928.

About this time, a serious outbreak of fire occurred, which necessitated the removal of the Company to its present place of business in Torrens Terrace, Wellington.

Over the intervening years, the firm continued to prosper under the control of Mr. Spears, ably assisted by Mr. Ritchie on production, Mr. Neale on sales and Mr. Cass as secretary. Upon Mr. Spears' death in 1948, he was succeeded by Mr. L. S. Dawson, who was eventually transferred to London in 1956.

Today, Mr. C. E. Berger, a sixth generation member of the House of Berger, holds office and, under his management, a solid expansion of the Company's acitivities has become effective. Of recent date, Mr. G. M. Healy, a New Zealander, has been appointed to the Board of Directors in the capacity of Secretary and Director. A matter of great pride to the Company is the fact that an exceptionally high proportion of New Zealanders are employed by this New Zealand Company.



MR. C. E. BERGER

Rapid expansion

A distributing depot was established in Auckland, and premises secured in Dilworth Building, Fort Street in 1933. Just prior to the Second World War, it was decided to establish a factory in Auckland. This was deferred but at the end of the War, negotiations were re-opened to purchase a suitable

THE MODERN FACTORY at Panmure, Auckland.

Lewis Berger & Sons
Lewis Berger & Sons

site and erect a factory. In September, 1956, the Panmure factory was officially opened by the Mayor of Auckland, Mr. J. H. Luxford.

This plant, which represented a heavy capital investment, is capable of producing sufficient paint to meet the demands of the Auckland Province and is so planned that it can be extended as the need arises. Facility of production and warehousing, a further avenue of employment, the eradication of problems of shipping and transport difficulties, have enabled the Company to provide a greater service to all retailers and users of Berger products.

The considerable floor space houses the Processing Plant, the Warehouse Section for finished goods, the Raw Materials Store, and a Varnish Kitchen capable of producing the Company's requirements of modern varnish media and a large proportion of its industrial coatings and resin requirements. A large Administrative Block and a modern Laboratory are provided.

This represents the Berger Organisation's second plant in New Zealand, its seventh plant in Australasia since World War II, and its 25th plant throughout the World.

Branches have been established at Napier, Christchurch and Dunedin and provision has been made for servicing facilities of the highest order at all these points.

It is well to remember that this New Zealand Company, which employs well over 100 persons, is but a part of a world group of companies with factories throughout the Commonwealth, in South Africa, the West Indies, every state in Australia, within the British Isles and Eire, as well as a main plant in Paris and inter-connecting links throughout Europe. Thus, from all these sources, the New Zealand Company is able to draw on the most up-to-the-minute techniques without hindrance.

A complete range of decorative and protective paints is manufactured for use by the building trade and by the home-owners. Similarly, in the industrial field, modern surface coatings are supplied to the motor, washing machine, venetian blind and refrigerator trades, as well as to all the requirements of the growing industries of New Zealand today.

The paint market in New Zealand is a big one and highly competitive. Over £7,000,000 worth of paint is used annually and the standards achieved by all Companies within the Dominion are creditably high.

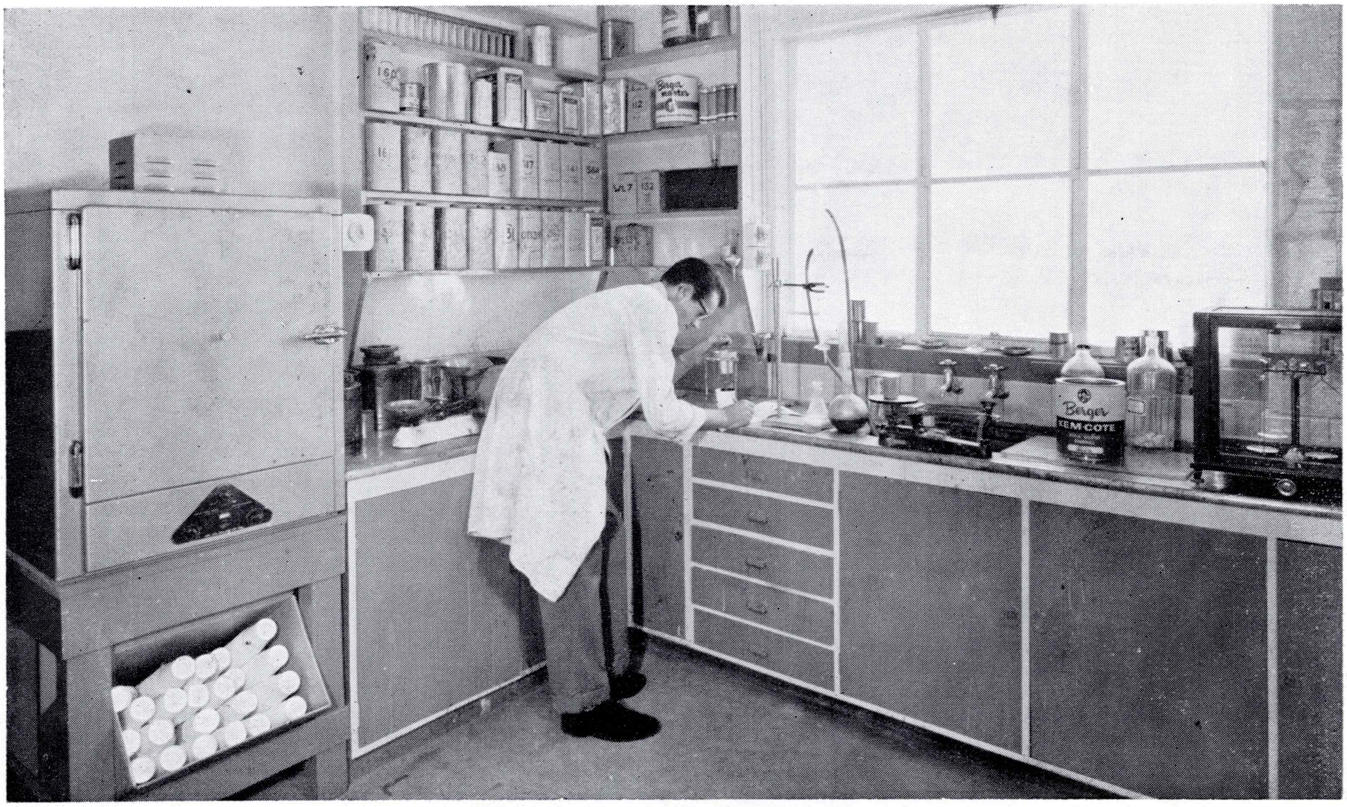
The Mayfair Colour Centre

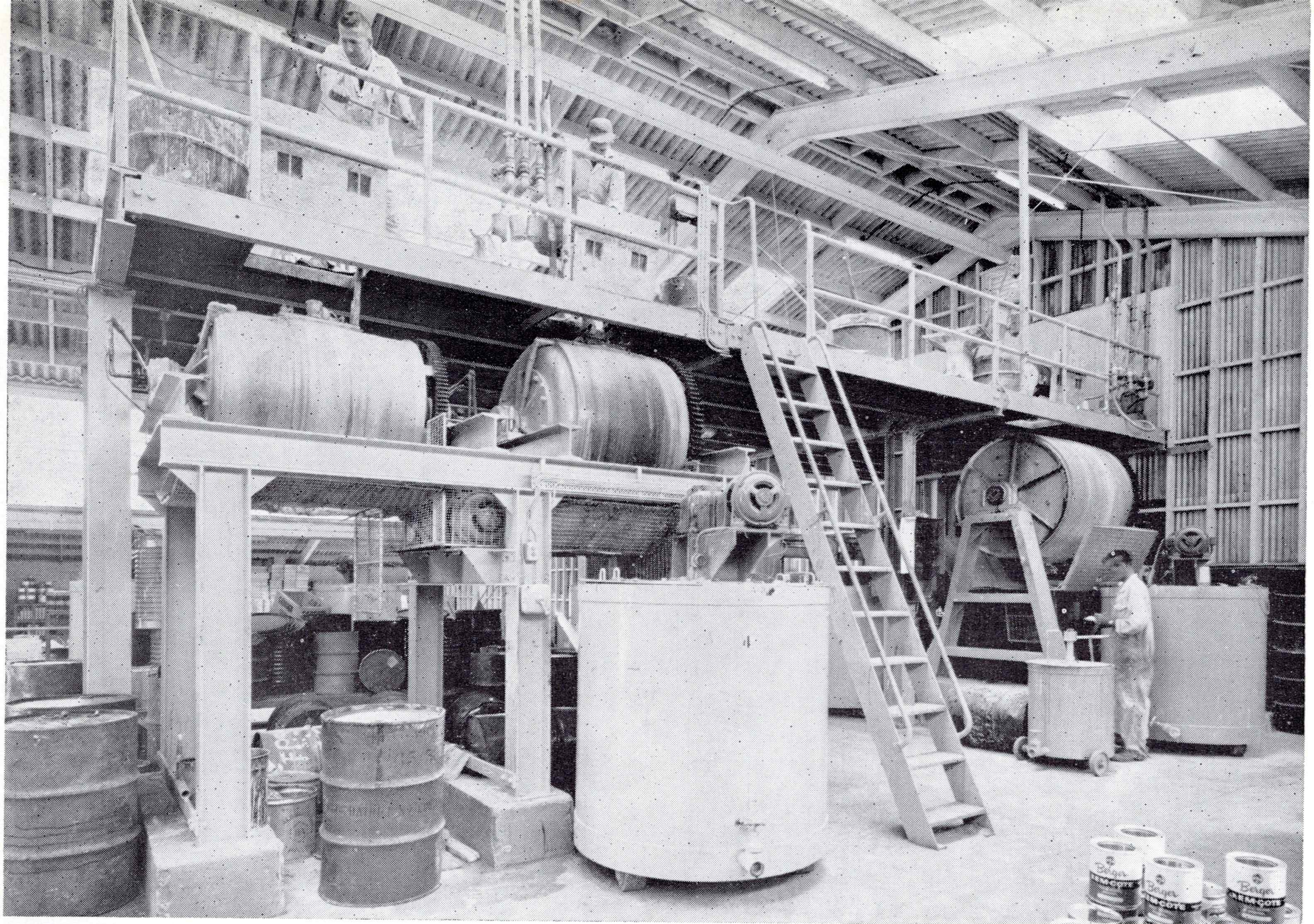
Berger makes available to both specifier and user, the service of its Mayfair Colour Centre, providing a unique and comprehensive service, without obligation, to those who are concerned wth the decoration of places in which people work, live and play.

The Mayfair Colour Centre plays an important part in all the Berger factories throughout the British Empire. It offers the preparation of colour schemes for proposed or existing buildings, and recommends the painting processes and finishing schedules in full detail. It is equipped to advise on any aspect of colour and decoration — aesthetic, practical or technical — but it does not seek to usurp, in any way, the normal relationship between the professional man and his client.

Technical liaison with the United States and the Continent keeps the Company abreast of modern trends in design and decoration. No colour scheme is too large or too small for the Mayfair Colour Centre and, in such cases as public buildings, factories, hotels, etc., full colour recommendations will be prepared and advice given on general problems and surface treatments.

A CHEMIST at work in the Auckland factory testing the Company's products.




Berger
KEM-COTE

A VIEW of the Ball Mills, Auckland.

BERGER PRODUCTS leave the factory for retail stores.

Factory photos by Sparrow Industrial Pictures.

Berger
Undercoat
Ready for Use
Berger
KEM-COTE
FLAT ENAMEL
Berger
FULL
KEM

A Company confident of its future development in the 'World of Plastics'

CLEARLITE PLASTICS LIMITED

25 College Hill, Auckland

This Company, which has become recognised as one of the leading plastics fabricators in New Zealand, had a rather fortuitous birth. 'Plastic memory' — a property inherent in Thermoplastic sheet materials which causes any article shaped from it to return to its original flat form when re-heated — keen insight into its potential, and observation on the part of the present Managing Director, Mr. J. M. Hobin, of the property of this particular material in action, brought about the growth of Clearlite Plastics Limited.

During the Second World War, Mr. Hobin had served in the R.N.Z.A.F. and in common with most members of that Force had whiled away many idle hours making various ornaments and knick-knacks from scraps of 'Perspex.' In September, 1946, continuing this hobby he set out to make a bracelet for his wife. The first effort was too small and the piece of perspex was re-heated in order to return it to its original flat strip for re-shaping. As it gradually straightened out, it took by chance a shape roughly resembling that of a Cabinet Handle or Drawer Pull. The idea struck home and, hey presto, a business was born ! !

Some sample Cabinet Handles were made and submitted to a wholesaler for appraisal. The time was opportune, the market favourable and the samples were welcomed.

Mr. Hobin's Air Force 'cobber,' Mr. S. J. Luke, who had but recently been discharged from the Services, was approached and the partnership — Hobin & Luke — was launched. Their combined knowledge of Plastics was nil; their confidence and enthusiasm unlimited.

A bold venture.

Suitable premises posed a major problem for anyone trying to commence business at that time. Added to this, the partnership's finance did not extend to the payment of 'key money,' which seemed to be the only way of obtaining premises in Auckland. Diligent searching, however, finally produced half of a basement under a shop at 12 Great North Road, although this had only a back entrance from a lane off Chapman Street. The hurdle of premises, modest as they were, overcome, a greater hurdle of acquiring 'know how' in a field not only new to both partners but also practically unknown in New Zealand had to be faced. After much trial and error, methods were evolved for turning their ideas into reality, and production was commenced with the first deliveries in February, 1947.

Original production was confined to clear perspex, this being the only sheet then available in New Zealand, but before long requests were received for Cabinet Handles in colour. The partners, thereupon, set to work to find ways and means of colouring clear sheet to the required shade. Finally, samples were run off and these were duly rushed down to their distributors where they jubilantly accepted an order for a substantial quantity of this new coloured product. A celebration luncheon was indulged in before returning to carry on the good work. But during their short absence their special dye formulation had mysteriously clarified and the dye bath now held only a crystal clear fluid ! Obviously, their sample handles would soon meet the same fate. The next morning confirmed their worst fears — the colour was rapidly disappearing from the handles as well.

Further feverish experiments followed, with much material assistance from their Perspex suppliers, Imperial Chemical Industries (N.Z.) Ltd. However, in the course of their experiments, a most potent tear gas was produced, causing a hurried evacuation of the premises. Needless to say, success soon followed and handles were produced in a variety of colours, as well as the original crystal clear type.

In October, 1947, the business was incorporated as a private Company under the name of Clearlite Ltd. — later changed to Clearlite Plastics Ltd. — with the two partners as Directors of the Company.

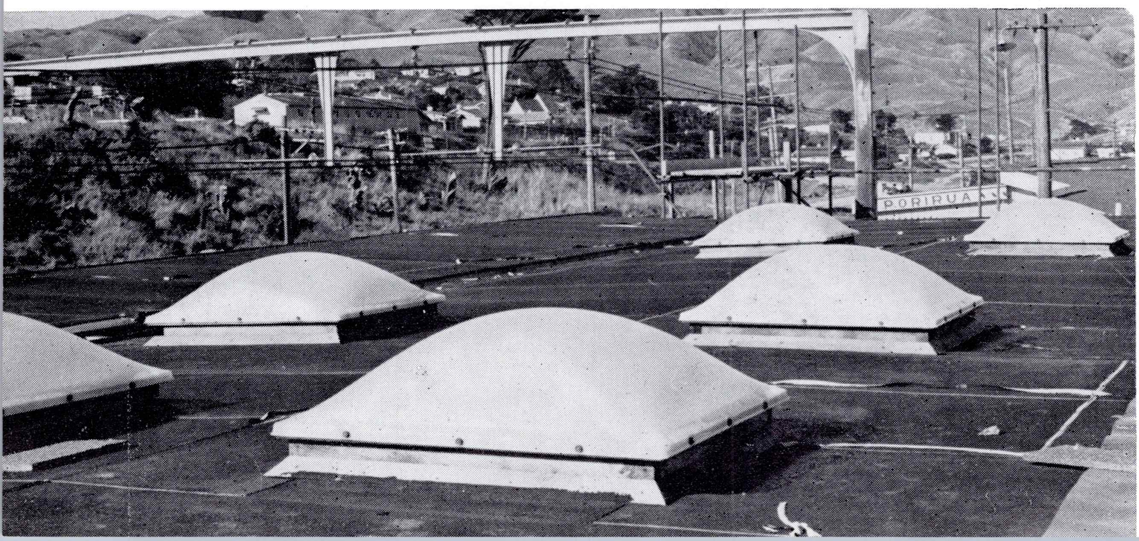
Throughout this period no time could be found for anything except the production of Cabinet Handles and, in meeting this demand, long hours, usually around 65 hours or more, were regularly worked each week. By the end of 1947, large quantities of the same product of overseas manufacture appeared on the market and the Company's Perspex handles, limited in design, lost favour almost overnight. The outlook was far from promising, but time was now available to direct their knowledge, so painfully acquired, into the development of other lines. Perspex display stands appeared to be an outlet. Samples were developed and circulated throughout New Zealand. Whilst a very anxious period awaiting orders passed, the Company's finances fell to a low ebb and confidence in the future of the business was severely strained. However, this new item was readily acceptable, a difficult time was overcome and the business forged ahead once again. This was followed up by their entry into the refrigerator field with the production of Crisper Dishes, Evaporator Doors, Cabinet Trims, etc. from perspex sheet.

Steady progress.

The Company made steady progress and, late in 1950, purchased a section of land in Gudgeon Street where a factory was eventually erected. With building control delays and shortages of materials, this building of some 3,000 sq. ft. was not completed until early in 1952 and the change-over to these premises was made in April of that year.

The Directors now focussed their attention on the new process of vacuum forming. The situation of having insufficient

A product designed to give maximum natural lighting in buildings. Shown here is an installation of Skydomes on the roof of an N.Z.R. building, Porirua. Skydomes developed by Clearlite Plastics Ltd., are made in one piece from "Perspex" acrylic sheet.



Clearlite Plastics Ltd.

THE FACADE of the Clearlite building by night. The manufacture of Plastic Signs is one of the activities of the Company.

capital available to purchase any of the few machines then being made overseas, clinched the decision to build their own. The problem was passed on to the Company's engineer, Mr. V. W. Blake, who, having read what little had been published about the process and with only a few magazine articles as a guide, built a machine suitable to the firm's requirements. It was an immediate success, enabling the Company to pioneer the use of plastic sheet for the interior liners of refrigerator doors, etc.

The first machine soon proved inadequate in size and was enlarged to enable it to handle sheet stock up to dimensions of 6ft. by 4ft. Improvements were also made to the heating elements and, still later, the machine was duplicated; since then, two further machines have been built. The last machine was designed for automatic operation necessary for the rapid forming of thin gauge sheet used in packaging and display units. The introduction of vacuum forming not only widened the range of plastic sheet materials used by the Company, but also the end uses to which these sheets could be economically applied.

In 1954, an adjoining section of land was purchased and, in 1956, a further building was erected with its frontage on College Hill. An expansion programme is planned for the future.

Appearance, Quality, Durability.

Throughout, the Directors have always placed great emphasis on quality and have built up an enviable reputation in the field of sheet plastics. Capital has been increased from time to time as business has grown and now stands at £10,000 fully paid. Further, to meet the demand, a skilled staff with a wealth of experience has been banded together.

A large and increasing volume of work in the display and advertising fields has come to the Company in recent years. In order to cope with this adequately, a Silk Screening and Plastic Printing Department has been established, together with competent Art Staff under the control of Mr. T. N. Gordon. The Company now has its own Engineering and Design Section where all the moulds required are designed and made. The factory is well equipped with all types of machinery necessary for all classes of sheet plastic work.

Production ranges from tiny covers for gramophone needles to large one-piece "Skydomes" for roof lighting of buildings. All classes of custom work in sheet plastics are undertaken and the Company has had the honour of twice winning the N.Z. Institute of Plastics Award for the Best Plastic Industrial Article of the Year and also a first and a first equal in the Consumer Goods Class. It is noteworthy that these awards have been won in the two years that the Company has taken part in the competition.

Along with the Department of Scientific and Industrial Research, 'Clearlite' has co-operated in the production of specialised hospital equipment and with the medical fraternity in making Plastic Oxygen Hoods and Baby Basinettes for hospital use.

The Company's Plastic Signs have displayed business names and products to great advantage, allowing them to become more generally and widely known.

Recently, Mr. S. J. Luke, co-director with Mr. J. M. Hobin of the Company since it was formed, has retired from the business and his place has been filled by the appointment of Mr. K. E. Fletcher, well known in the plastics industry throughout New Zealand and past president of the N.Z. Institute of Plastics. Mr. V. W. Blake, another Director, is the Company's Engineer, and Mr. J. H. Hobin, A.C.I.S., A.R.A.N.Z., the Secretary. This team, with the able assistance of skilled staff, faces the future with great confidence in the further development of Clearlite Plastics Ltd.

WILSONS (NZ) PORTLAND CEMENT LIMITED

Head Office: South British Insurance Building
Shortland Street, Auckland C1
Plant : Portland, N.Z.

More Than 40 Years of Cement Production

On New Zealand's East Coast, and just south of Whangarei, is the huge cement works operated by Wilsons (N.Z.) Portland Cement Ltd. Established in this district because of adequate supplies of raw material, with excellent sea, rail and road connections, the works are adjacent to vast sources of cement rock, which is won from the hillsides by three large shovels.

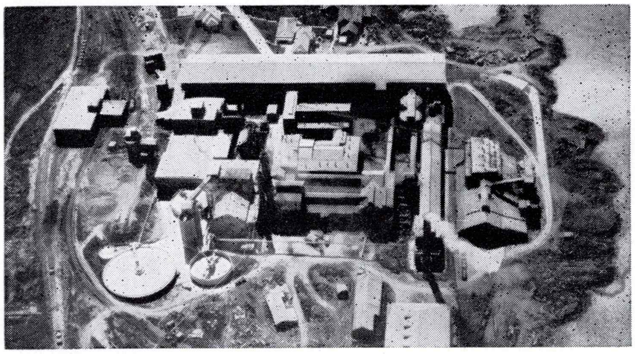
Old in experience, the company is far advanced in plant and equipment and in the development and uses of new techniques in the control and production of cement.

Spectacular Process

One of the most interesting of the many stages in producing cement — and certainly the most spectacular — is that where the mixture of slurry and water is calcined, or clinkered. This process is carried out in five Rotary Kilns of enormous size, and one of these is shown in the photograph. This kiln is 274 feet long and lined throughout with firebrick. Pulverised coal is blown through a burner into the kiln by a powerful fan. This spray of fine coal dust is ignited and sweeps through the kiln as a giant torch of flame. As the great kiln revolves, the water leaves the slurry in the form of steam. The dry particles emerge white hot as cement clinker and after cooling and further treatment, the finished cement is carried by belt conveyor to the storage bins.

Shipping Facilities

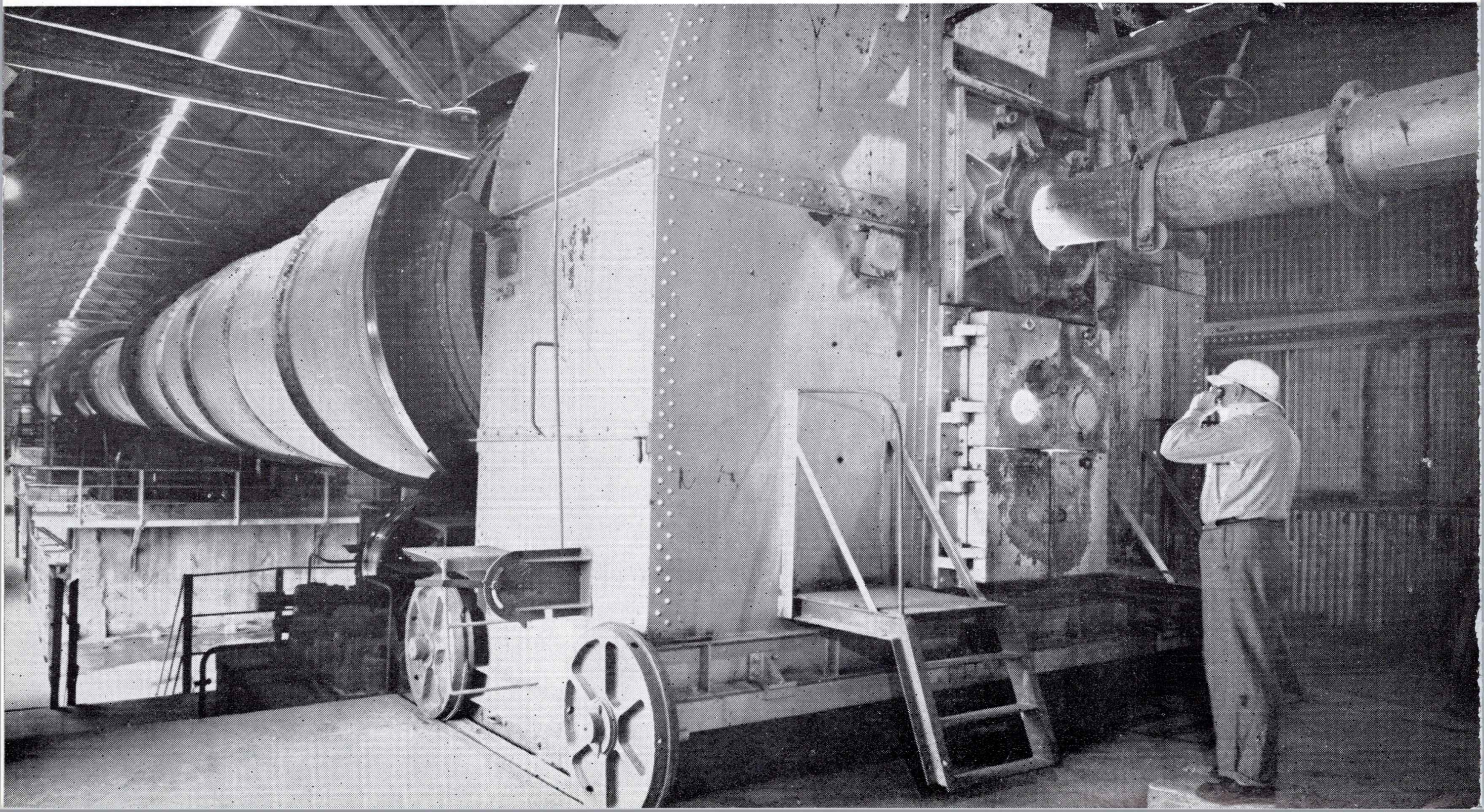
Strategically situated, Wilsons Portland Cement Works are easily accessible by sea, rail and road. Wilsons Cements are shipped and railed over a wide distribution area and the Company has its own fleet of coasters.



GENERAL VIEW of Wilsons (N.Z.) Portland Cement Ltd., plant at Portland.

Two Main Products

In addition to the well-known "Star" brand Portland Cement, "Wilsonite" is also produced by the plant at Portland. "Wilsonite" is a rapid hardening Portland cement and is invaluable when rapid construction and quick hardening is essential. With full confidence, the Company claims that both "Star" brand and "Wilsonite" Rapid Hardening are equal, if not superior in quality, to Portland Cements made in any part of the world. Every bag is guaranteed to exceed by generous margins the requirements of the New Zealand Standard specifications for Portland Cement.



To protect and decorate is the function of this versatile material, available in over 1,000 different finishes

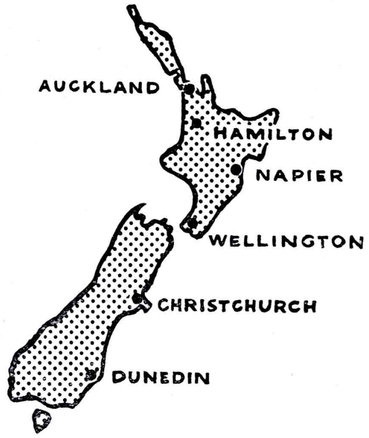
TAUBMANS PRODUCTS LIMITED

IN ASSOCIATION WITH

PINCHIN, JOHNSON & COMPANY (N.Z.) LIMITED

and RED HAND COMPOSITIONS COMPANY

Head Office: Wellington, Stone Street, Miramar



and at

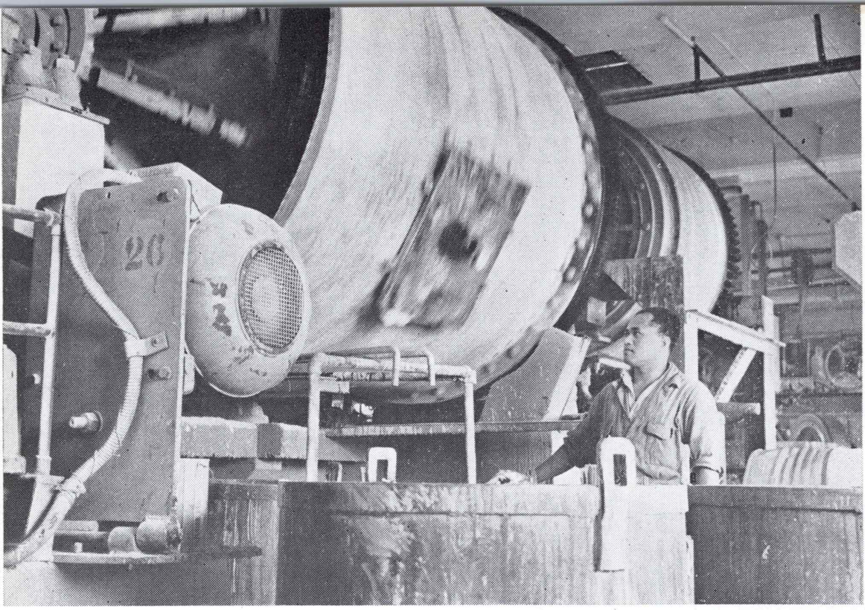
AUCKLAND, Federal Street
HAMILTON, Killarney Road, Frankton Jn.
NAPIER, Austin Street, Onekawa
CHRISTCHURCH, Princess Street, Riccarton
DUNEDIN, Great King Street

ASSOCIATED IN AUSTRALIA WITH

TAUBMANS INDUSTRIES LIMITED

SYDNEY MELBOURNE BRISBANE ADELAIDE PERTH LATROBE
NEWCASTLE WOLLONGONG CAIRNS LISMORE LAUNCESTON

and Associated with Pinchin Johnson & Associates Limited, the world-wide Pinchin Johnson Group of Companies —the largest organisation in the world specialising in the manufacture of paints and varnishes.



A 1,000 GALLON ball mill in operation.

Paint is a versatile product. It is the decorative and protective colour on the walls of your home, the dazzling white of a refrigerator, the pink and white of a toy doll, or the grey strength of a massive bridge.

Paint may be known to you only as the finish on your house, yet you encounter it daily in other ways, often without recognizing it. The canned food you eat is kept fresh and free from taint by interior finishes . . . toothpaste tubes are coated with flexible, alkali-resistant enamels . . . the roads you drive on are marked with dividing lines of traffic-resistant paint.

Taubmans not only make over a 1,000 different finishes in all, but advise on the best way to use their paints, where they should be applied, surface preparation, application methods and use of colour.

TAUBMANS
PRODUCTS
LIMITED

COLOUR tinting in progress.

PART of the battery of mixing tanks.

All these activities call for specialist treatment and a very high standard of knowledge, both practical and scientific.

This scientific approach, coupled with sound, practical knowledge of the protective and decorative needs of architecture and industry, is the factor which makes for success.

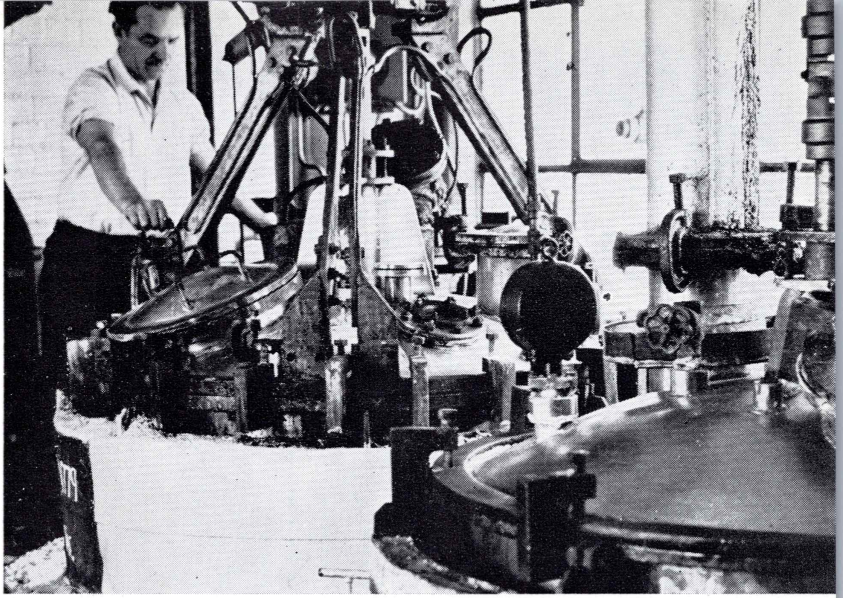
Specially Formulated for "Inside" or "Outside" Use.

Taubmans paints are specially formulated for either inside or outside use. The conditions that prevail for inside painting are different from those for outside. So Taubmans paints are specifically "inside" or "outside" paints. Taubmans do not subscribe to the idea that an "inside-outside" paint can be fully satisfactory.

For the convenience of users, Taubmans manufacture a wide range of "ready-mixed" paints—all coloured by tinters, who are highly qualified experts in colour matching.

Colour tinters are selected, in the first instance, after passing a colour vision test and are then trained until they have achieved basic proficiency.

After tinting, a sample of the paint is sent to the paint laboratory, where it is tested for colour, opacity, viscosity, drying, hardness and gloss. The paint sample is then applied to an undercoated surface, over which has been superimposed a thick black line. From this applied sample, the colour is checked against a master standard; the opacity can be assessed by observing the degree of obliteration of the black line, and the gloss and hardness are compared with the control standard batch.



VARNISH pots.

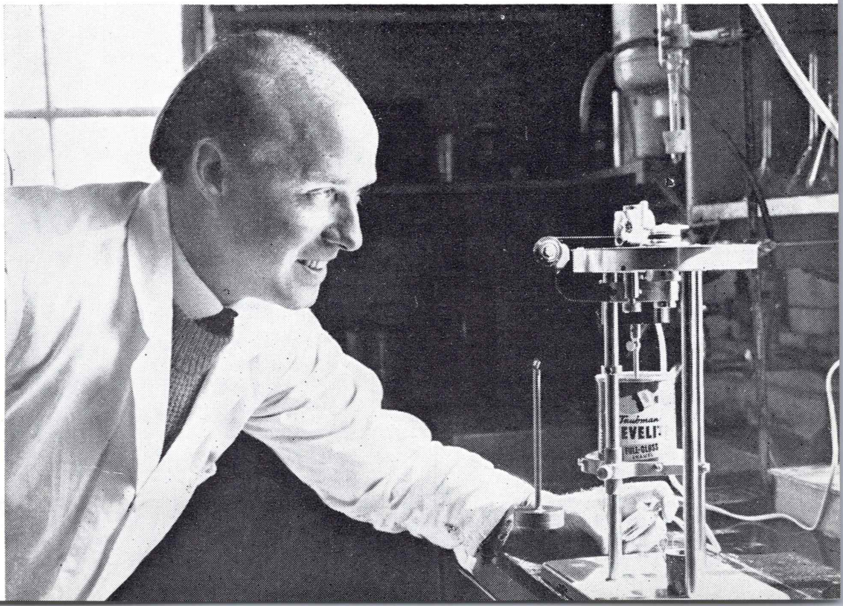
MECHANISED can filling.

TAUBMANS
PRODUCTS
LIMITED

Quality control of Taubmans paints does not finish when the lid goes on the can, as an extensive exposure programme is carried out on all products. These exposure tests are designed to accelerate any failure of the paint film in regard to colour, gloss or film integrity.

Raw Materials are drawn from many parts of the world.

Raw materials for a can of Taubmans paint come from all over the world. Oiticia and castor oil come from the Amazon Basin in South America; Titanium



LABORATORY testing.

6 9 2 9
TAUBMANS
PAINTS

A MODERN method of packing.

Dioxide from U.K., U.S.A., and Japan; Congo copal gum and Manganese come from Africa; Soybean oil from India; Tung oil from China. New Zealand Linseed Oil supplies are supplemented from India and South America; synthetic resins, specialised solvents, pigments and dyestuffs come from the United States. All these raw materials are subjected to rigid tests in Taubmans' laboratories. In the Materials Testing Section of the Works Laboratory, pigments are tested for colour, fineness, tinting strength (the amount of hiding power a pigment possesses), oil absorption and moisture content; solvents are examined for solvency and distillation range, varnishes, oils and driers for rate of drying and viscosity. Any raw materials which do not pass these stringent tests are rejected, for only the highest quality materials are used.

How Paint is Manufactured

Production of decorative, ready-mixed paints, commences in the Mill Room, where batteries of ball mills, with up to a 1,000 gallons capacity, disperse the pigments in a mixture of solvent and varnish to produce a concentrated mill base.

The ball mills are cylindrical drums, which are half-filled approximately, with either steel or porcelain balls. The porcelain balls are used inside steel mills which have been lined with porcelain tiles, and these mills are used exclusively for the production of clean, white bases.

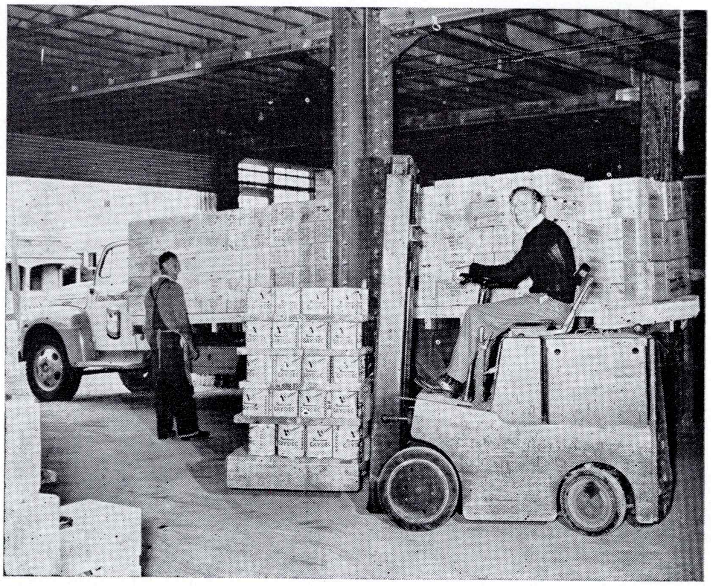
Dispersion is obtained by rotating the ball mill with its charge of pigment, solvent, vehicle and balls, so that constant tumbling of the balls through the mixture produces an extremely fine dispersion of pigment. This process continues until the desired fineness is reached, and this may take as long as 48 hours, depending on the hardness of the pigment and the fineness required.

The mill base is then discharged into high-speed mixers, where the remaining materials are added and mechanically agitated by speeding blades until uniform.

A STORE demonstration by two Taubmans experts.

REVEL
REVELITE

THE finished product leaves the factory.



A large and progressive industry in clay

CONSOLIDATED BRICK & PIPE INVESTMENTS LIMITED

201-205 Queens Arcade, Customs Street East
Auckland, C1

Aerial view of the Company's works at New Lynn, Auckland.

—Photo: White's Aviation.

BULK DELIVERY. Packaged bricks ready for rail despatch.

Brief history of the company

Consolidated Brick and Pipe Investments Limited consists of Amalgamated Brick and Pipe Company Limited and its Associate Company, Amalgamated Brick and Pipe Company (Wellington) Limited, together with their respective subsidiary companies. The Company was formed in 1929, at which date manufactured products consisted of bricks and earthenware pipes. Immediately following the formation of the Company came the slump of 1930-1937, which was instrumental in putting out of business the majority of firms engaged in brick and earthenware pipe production at that time. Despite this bad beginning, the Company's history has been one of success. In 1930 the group entered the manufacture of reinforced concrete sewer pipes in both Auckland and Wellington, and later commenced the manufacture of high grade refractories at Kamo. The year 1938 saw the beginnings of the manufacture of electrical porcelains, and 1940 the extension into the crockery business, the establishment of which was an achievement of considerable technical magnitude.

Present position

A milestone in the Company's progress was celebrated in Auckland on July 18, 1959. Members of Cabinet and the Parliamentary Opposition and leaders in the wholesale and retail field in New Zealand were conducted through Crown Lynn Potteries and later a presentation was made to the Prime Minister of the 100,000,000th piece of pottery produced.

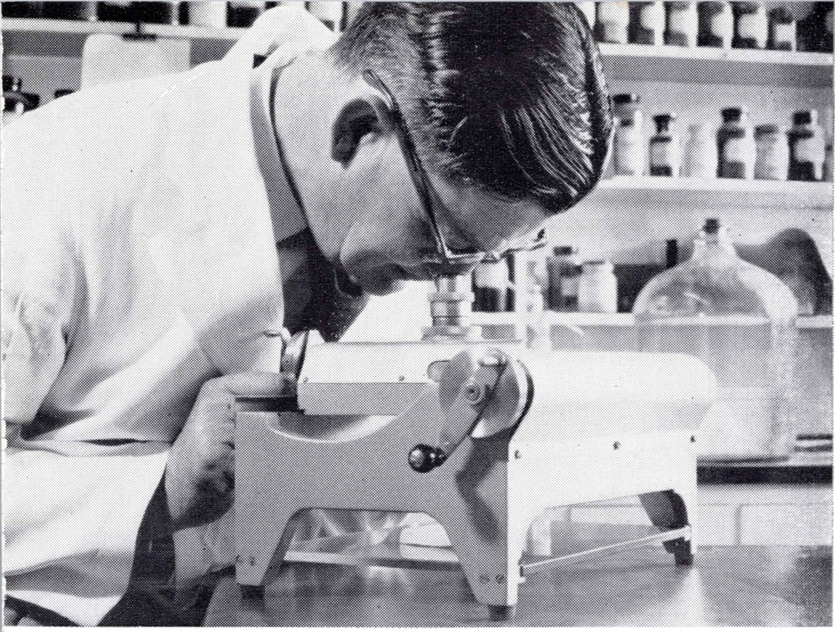
In the electrical and refractory porcelains section, the Company manufactures the majority of the porcelain insulator requirements for the electrical appliance industry in New Zealand.

The demand for brick remains high and it is the Company's intention to increase its output by a further 7,000,000 bricks per annum, with the installation of additional mechanised plant of the very latest design.

Glazed earthenware has for many years proved itself the material most suitable for the conveying of sewage and the recent development of pipes with an easy-to-lay flexible joint has been enthusiastically received by the trade.

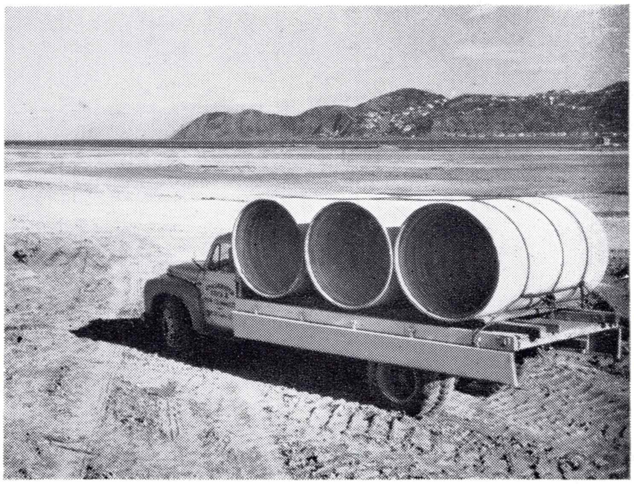
Among its other activities this Company operates the Tate Process for cleaning corroded water mains and lining them with cement without the need for removing pipes from the ground. Cleaning and cement lining by the Tate Process renews the original capacity of the main on a permanent basis.

Consolidated Brick and Pipe Investments Limited now has more than 2,000 shareholders and factories in the group employ more than 700 people.

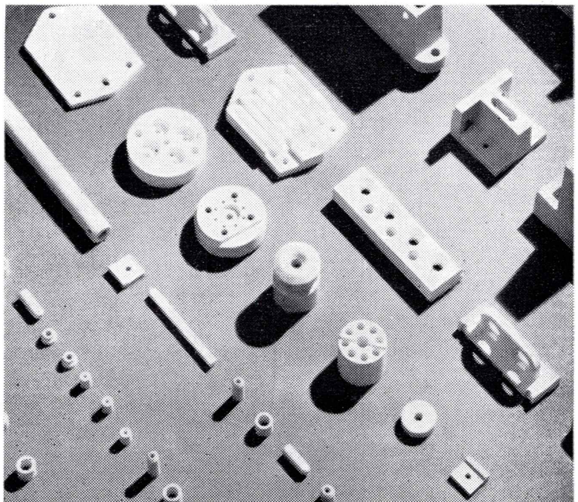


AN INDUSTRIAL CHEMIST in the Company's research and development department determining body shrinkages with a travelling microscope.

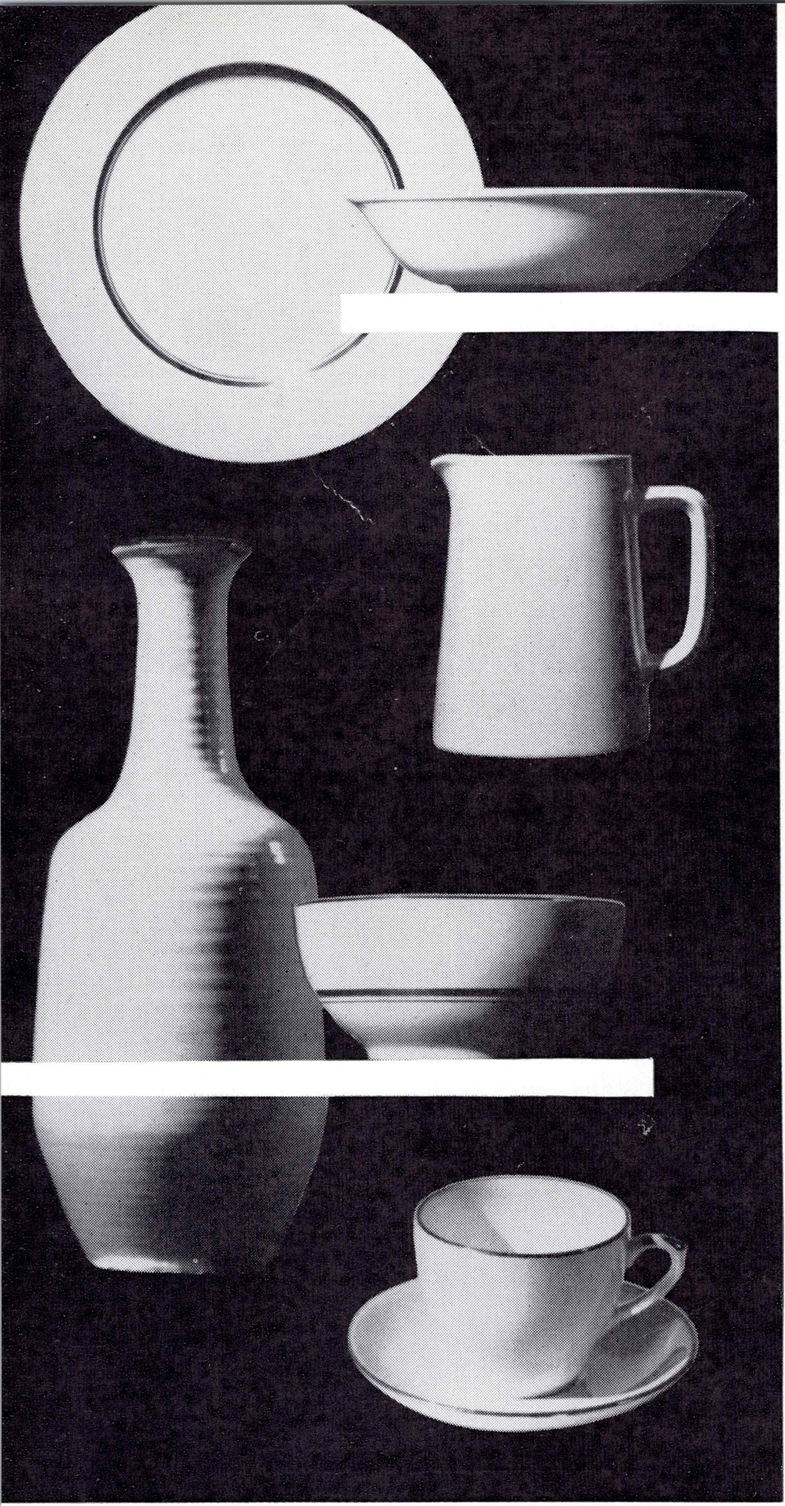
RAPID AND EFFECTIVE HANDLING of brick is made easier by pre-packaging. Mechanical aids cut costs — speed delivery.



LARGE QUANTITIES of reinforced concrete pipes were supplied by the Company in the construction of Rongotai Airport.



ELECTRICAL PORCELAINS: A sample of the variety produced at the Company's ceramics division at New Lynn.



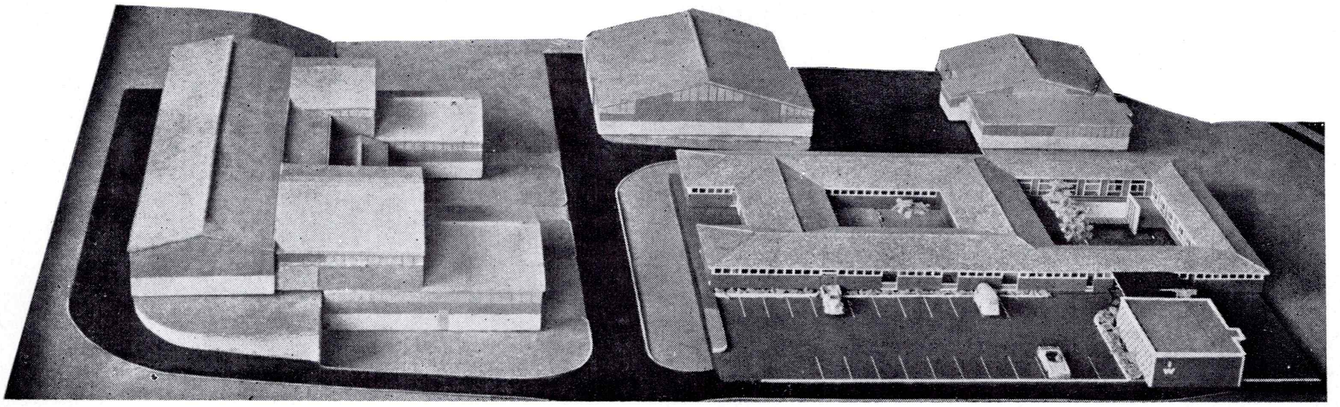
ART POTTERY and tableware in sufficient quantities and in range to suit all tastes in New Zealand. Quality compares more than favourably with imported lines.

A SECTION of Crown Lynn Potteries factory showing spraying booths.

CROCKERY being stacked in preparation for firing.

Scope of manufacture

Goods manufactured or services rendered are listed broadly as follows:–**Bricks,** at Whangarei, New Lynn, Avondale, Miramar and Wanganui. **Crockery,** at New Lynn. **Earthenware Sewer Pipes,** at New Lynn, Wairoa, Silverstream and Miramar. **Reinforced Concrete Pipes,** at Auckland and Wellington. **Field Tiles,** at Auckland, Carterton, Whangarei and Waitara. **Plimortar,** a mortar plasticiser, at New Lynn. **Special Refractories,** of all types, at Kamo and New Lynn. **Electrical Insulators,** at New Lynn. **Cement Lining** of Water Mains by the Tate Process anywhere in New Zealand. **Road Metal,** at Melling, near Wellington.



A model of projected new premises of Ivon Watkins Ltd., in a New Plymouth industrial zone.

Pioneers in the use of modern chemicals in agriculture and horticulture

IVON WATKINS LTD

Buller St, New Plymouth

The name of Ivon Watkins first appeared on the New Zealand business scene when a small nursery business was established in New Plymouth in 1924. Twenty years later, the present company was incorporated, with the three Watkins brothers as employee-shareholders.

In 1946, the Company was appointed sole manufacturing licensee for New Zealand and Australia for American Chemical Paint Company, originators of "Weedone" hormone type weedkillers and world patentees of many of the synthetic plant growth substances which today form such a vital part of the world's agricultural and horticultural industries.

The Australian business was handled through a Sydney branch office, which was discontinued in 1949, when an associate company was formed to take over and operate the "Weedone" franchise in Australia and mandated territories.

To finance the vigorous growth of Ivon Watkins Ltd., several capital increases were made and, in 1952, the Company was re-registered as a public company. The efforts of these early years resulted in the building up of a manufacturing, technical and selling organisation which is unequalled in the field of agricultural chemicals in this country. Over recent years, a planned policy of diversification has been followed, so that the Company now has a very comprehensive range of products for use in farming, agriculture and horticulture. The product development section is constantly working on new products which will later be introduced to the sales range.

Manufacturing

The first factory was set up in an old disused bakery off Liardet Street, in which a staff of four, using blending and packing plant primitive by modern standards, coped satisfactorily with demand until larger premises became available in Buller Street.

Present up-to-date facilities include a reaction plant (the only one in New Zealand) used for esterifying 2,4,-D, 2,4,5,T and MCPA, the active ingredients of many hormone weedkillers. The installation of this plant has already saved the country many scores of thousands of pounds of overseas currency. A fully-equipped laboratory staff exercises strict quality control over raw materials and finished products Engineers design and manufacture all types of equipment for applying weedkiller or insecticide sprays from ground or air. Contract production of components for the electrical, engineering, motor and other industries is also undertaken in the company's modern workshops. A Becheler fully-automatic lathe is an interesting item of plant. The workshop has its own engineering draughting staff and operates a plant maintenance section.

Sales and Distribution

The Company's products are sold through nearly 300 wholesalers, stock and station agents and merchants throughout New Zealand.

In addition, resident Technical Sales Representatives are stationed in eight areas throughout the country. The Company's Printing and Display Department produces most of its labels, leaflets, technical sheets, publicity releases, etc. A vast amount of information is gathered annually from field trials conducted continuously throughout the country on crops and pastures, and on the eradication of weed and insect pests. A skilled and experienced staff is assisted by the Company's extensive technical library, and provides a comprehensive advisory service of a very high standard.

Overseas agencies

Among the more important overseas principals are: Amchem Products Inc. (formerly American Chemical Paint Company) U.S.A. (Weedkillers and plant growth regulators); Geigy Chemicals, Australia (insecticide and weedkiller products); Cela GmbH, Germany (insecticides); Monarch Manufacturing Works, U.S.A. (Spray Nozzles); Hardie Manufacturing Co., U.S.A. and R.S.M. Sprayers, Denmark (orchard Spray Units); Farbwere Hoechst, Germany (fertilisers); British Hydrological Corporation, U.K. (detergents).

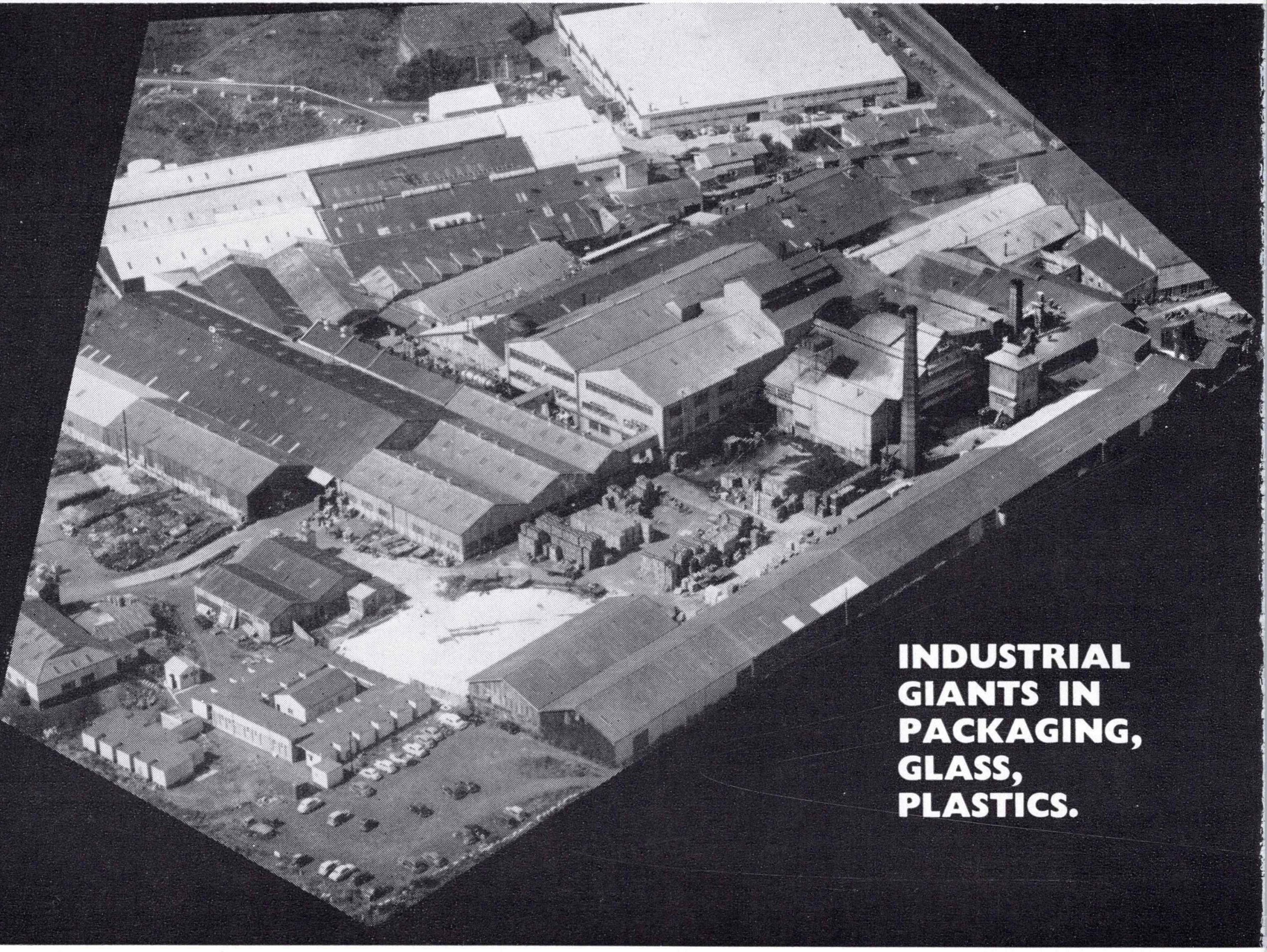
Staff and Directors: Chief executive officers of the staff of 80 are: Mr D. A. Watkins, Managing Director; Dr J. C. Andrews, Works Manager; Mr L. R. Harland, Sales Manager; Mr D. G. Brash, Secretary. Chairman of Directors is Mr G. J. Broker, Public Accountant, of New Plymouth. There are two overseas Board members: Mr. D. G. Michelmore, Managing Director of the Company's Australian associate company, and Mr J. O. J. Shellenberger, a Vice President of Amchem Products, U.S.A.

Future Plans: Although most of the Company's activities are concentrated on the Buller Street site of 1½ acres, five other premises in other parts of the city are leased for various purposes.

With the recent opening of industrial sites near the Port area by the New Plymouth Harbour Board, the Company seized the opportunity of consolidating on to a 7½-acre site which will allow all manufacturing and administration units to operate on the same area.

The completion of this £120,000 building project in 1960/61 will contribute still further to the efficiency of the Company which pioneered modern chemical farming techniques in New Zealand and appears likely to remain in the forefront of the industry for many years to come.

ACI AUSTRALIAN CONSOLIDATED INDUSTRIES



Whites Aviation Photo

Penrose, New Zealand's largest by far industrial area, is situated approximately eight miles from the centre of Auckland City. In this area you will find the works and factories of the giants of New Zealand Industry. The giant among giants is undoubtedly the Australian Consolidated Industries Group comprising three companies — the New Zealand Glass Manufacturers Co. Pty. Ltd., A.C.I. Fibre Packages Pty. Ltd., and A.C.I. Plastics Pty. Ltd.

These three companies had their beginnings in New Zealand in 1922, when the directors of the Australian Glass Manufacturers Co. Ltd., Melbourne, decided to establish a Branch Factory at Penrose. From these early operations have sprung the three separate industries that play an important part in the economic life of this Dominion. Their factories cover over 12 acres, and supply practically all the glass containers, all the corrugated cardboard and a large percentage of the plastics used in this country.

N.Z. GLASS MANUFACTURERS CO. PTY. LTD.

The first production unit was a furnace to make amber bottles and was equipped with semi-automatic machinery. Molten glass was hand fed to the machines by gatherers using a 4 foot rod, on which they skilfully collected the required quantity of glass and dropped it into the moulds of the bottle machine. On this machine the bottles were blown and then carried by youths to the annealing ovens.

In 1927 a second furnace and fully automatic machinery was installed to manufacture white glass. By 1940 both these furnaces were working 24 hours daily, seven days a week.

During 1941 a much larger white glass furnace was built and the original amber furnace was taken out of commission. During the intervening years, various improvements have been carried out to increase the plant's capacity, and today the company is producing sufficient amber and white containers to supply the full needs of the Dominion. Working on a three-shift basis, seven days a week, with a staff of over 500, the factory has produced over 100 tons of bottles and jars per day.

As a subsidiary of the Australian Consolidated Industries Ltd., the local company has access to the latest ideas and methods of glass production and is fully in touch with the newest overseas developments. This awareness of technical advances overseas prompted the installation of the very latest, high capacity six-section bottle machine — a machine as modern as any operating anywhere in the world.

Free exchange of technical resources also enabled the local company to introduce to New Zealand the important Applied Colour Labelling Process. This process, for applying indestructible labels to glass containers, is finding increasing application with manufacturers who pack in glass. The most important application of this process is in trip and return glass packaging, with the milk and cordial industries making increasing use of it.

Applied Coloured Labels are produced by screen printing in ceramic inks directly on to the bottle or jar. The bottle, with its screen printed label, is then carried on a conveyor through a huge oil-fired heating tunnel where it is progressively heated to almost the stage of collapse. The ceramic inks, manufactured from glass with a lower melting point, melt and fuse into the near molten glass to form a colourful label that can be destroyed only by breaking the container.

Any design capable of being reproduced in line can be printed by this method. The artist's original art-work is transferred to the screen for the printing machine by a photographic process. The printing of any colour, or any combination of colours, is possible by this process, but it has been found that two colours are the most economic limit of the application.

Two fully automatic printers, and two semi-automatic printers are installed in this department. The automatic machines are also used for printing Applied Colour Labels on plastic containers. No heat is used as part of this process. The special inks contain a chemical which has an etching action on the plastic surface while depositing the image. This label, too, has a degree of permanence matched to the life of the plastic.

A.C.I. Fibre Packages Pty. Ltd.

In 1931 the Company commenced the manufacture of corrugated cardboard in order to provide for the many forms of containers necessary for the safe transit of its own products throughout New Zealand. Today, this phase of the Company's operation has been so extended that a separate industry, in a factory of over 100,000 square feet with fully automatic machines, produces practically all of New Zealand's requirements in corrugated cardboard.

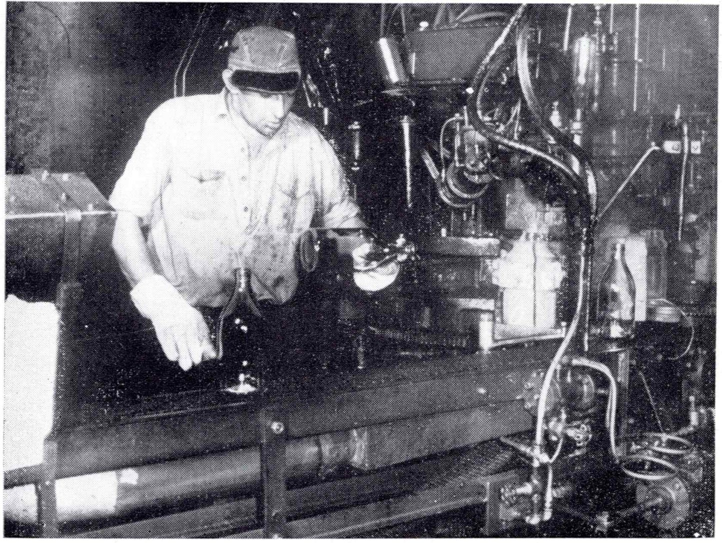
In the last few years, corrugated cardboard has all but replaced the once familiar timber cases. The expansion of the timber industry and the setting up of plants for the conversion of woodpulp to kraft paper has enabled the Company to produce packing materials that provide terrific economic advantages over all other forms of packaging.

The Company is producing boards to meet every packaging need . . . single faced, double faced, twin cushioned and wet-strength (moisture resistant). All types are available in natural kraft brown shade; double faced and twin cushioned qualities can also be supplied, bleached white on one or two faces. Custom-printed colours or custom-printed designs can be arranged to order on specified quantities.

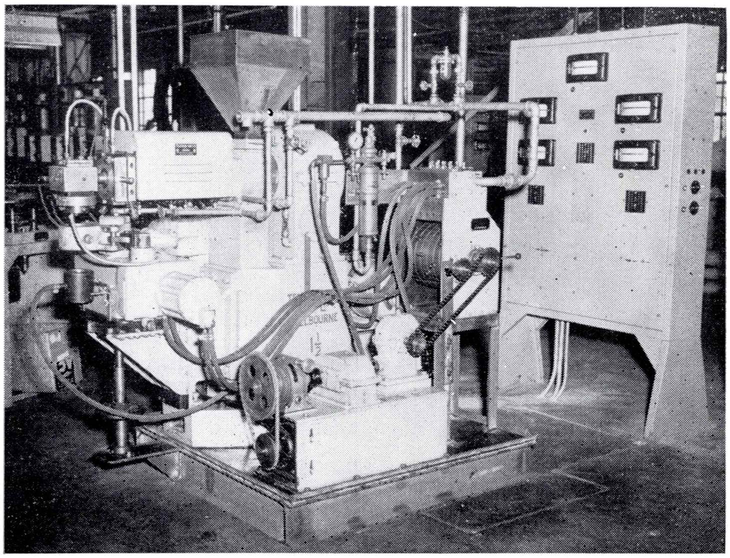
This printing is done at the paper-mill during the manufacture of the kraft stock, and is delivered at the factory ready for fabricating.

Box factories the length and breadth of New Zealand

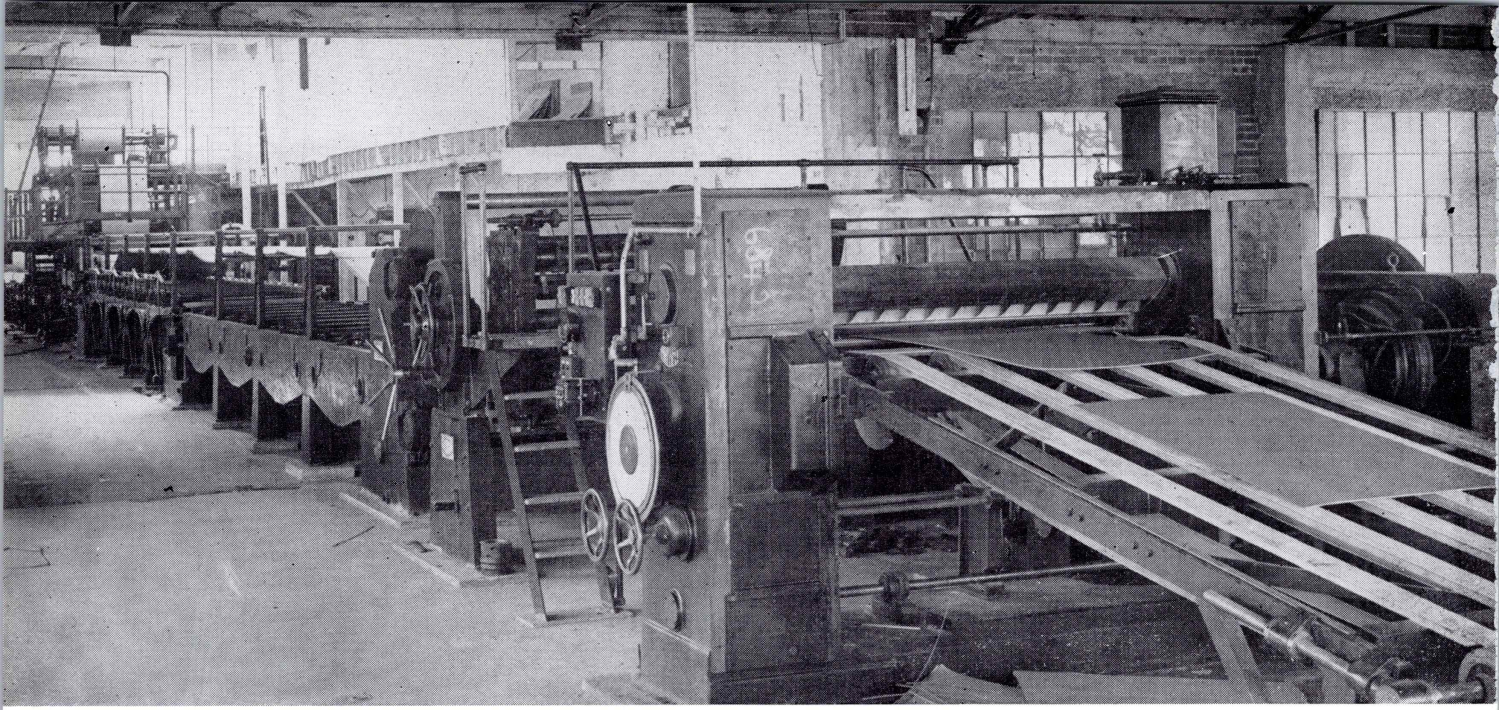
SECTION of permanent display at Auckland Sales Office.



BOTTLE MAKING MACHINE.



PLASTIC bottle cap moulding machine.



process thousands of tons of corrugated board annually into boxes and cartons for the packaging of the country's fast growing list of manufactured goods for both home consumption and export.

The two-fold benefits of packaging in corrugated cardboard are firmly established in modern merchandising methods. Lightweight, yet strong, corrugated cardboard cartons, interior cushioning strips and packing, drastically cut packing and freight charges, while the brightly printed cartons are seen by hundreds on their journey from the factory to their ultimate sales point. In many cases, these cartons can be designed as point-of-sale display pieces to further their value in selling the brand name and product. In fact, colour printed corrugated cardboard containers are one of the cheapest forms of advertising.

By constant expansion and by full usage of overseas developments and techniques, the Company has made New Zealand self sufficient in yet another phase of modern packaging.

A.C.I. PLASTICS PTY. LTD

With the increasing demand for glass containers and the need for improved closures, it was not unnatural that thoughts attuned to the production of glass should turn to the field of plastics.

From a few presses manufacturing a wide variety of bottle closures and electrical fittings has grown the huge plastics manufacturing company that is the third A.C.I. subsidiary at Penrose.

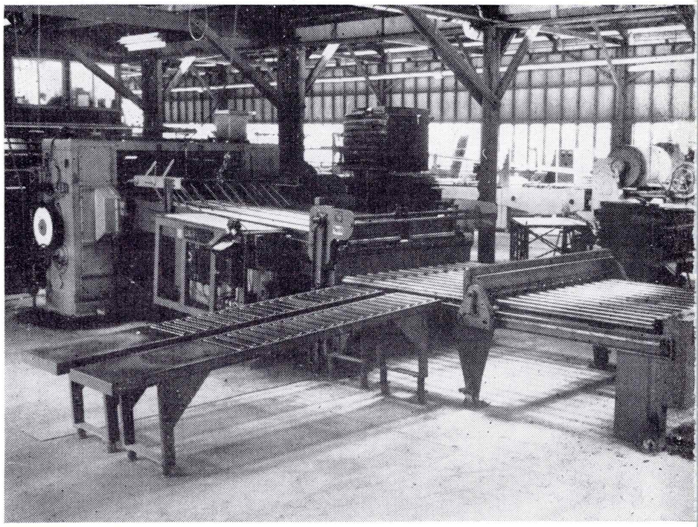
Today, the factory is equipped with the most modern equipment for the manufacture of plastics by compression injection and extrusion methods. A wide range of domestic and industrial mouldings, from small to comparatively large sized articles, is produced.

The Company maintains a completely equipped diemaking section, with the capacity and machinery to produce the most complex dies for plastic moulding.

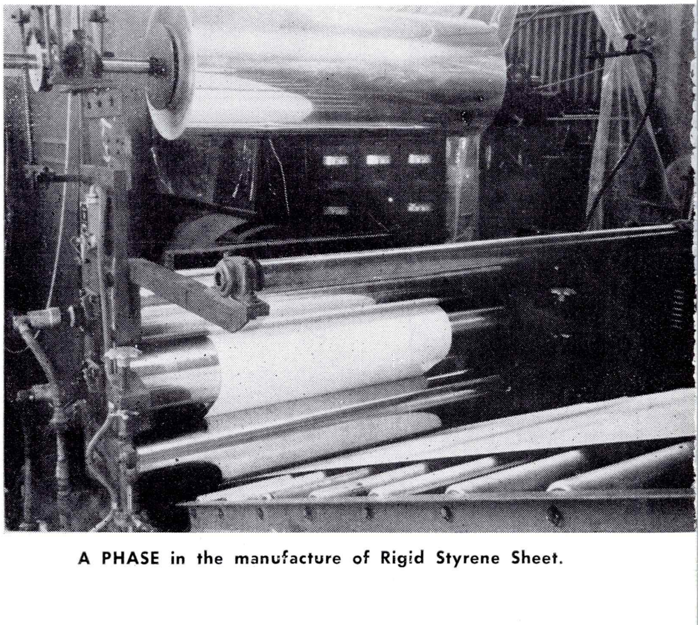
In the field of extruded plastics, the Company is a large scale producer of items previously imported. Polythene film for packaging, building and horticultural uses is produced in large quantities. The demand is an ever-increasing one, as various industries — both primary and secondary — discover new uses or improve on existing standards with this 20th century material.

The factory also supplies plastic fabricators throughout New Zealand with a high percentage of all the rigid styrene sheet used for post-forming the widest variety of products, from electric signs to refrigerator liners.

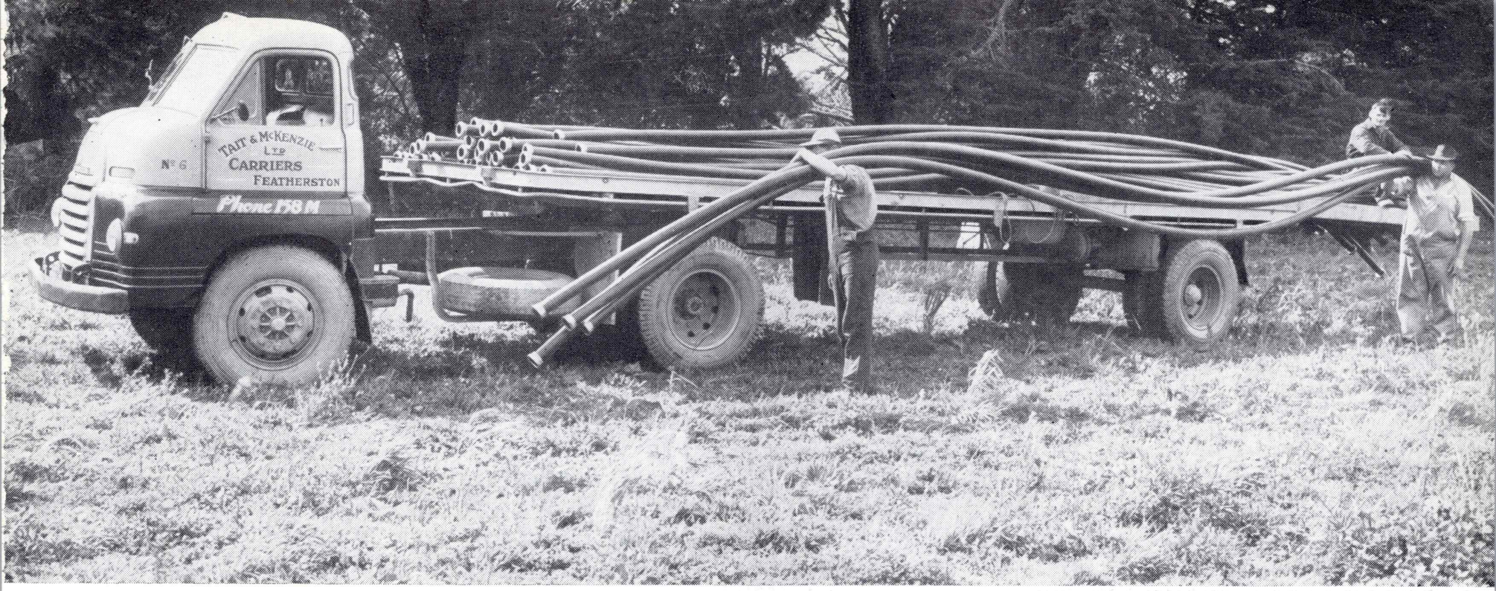
Plastic pipes of both polythene and rubber based plastics are also produced by modern mass production methods and



CORRUGATED CARDBOARD MACHINES.



A PHASE in the manufacture of Rigid Styrene Sheet.



LARGE BORE CONTOUR PIPE being delivered to major installation.

machinery. These pipes have enjoyed eager acceptance, and in many cases are replacing conventional materials once in widespread usage in industrial, agricultural and domestic applications.

Access to overseas developments has paid rich dividends to the Company in processing plastic pipe. One such development alone — stress-freeing the pipe during manufacture — has enabled the Company to outstrip its competitors.

Contour Pipe—first choice on the farm and in industry

Contour Polythene Pipe provides the farmer with a simply installed method of water reticulation for irrigation, stock watering and general farm water services. On the farm Contour Pipe also finds widespread usage in lines used for conveying skim milk, and provides a performance far in advance of any previous method.

Simple jointing procedures, general ease of installation, low cost, and high performance have won for Contour Pipe an unassailable position as the country's biggest selling farm-piping.

Industry, too, has discovered the inherent advantages of Contour Pipe for use in services conveying difficult liquids — in services where absolute purity must be maintained and in services that can be completely flushed out.

These advantages coupled with Contour Pipe's low installation cost considerations have ensured its use in the majority of the big industrial applications throughout the country.

In the building trades, too, these advantages have not gone unnoticed. Contour Pipe is serving in such diverse applications as ducting for pre-stressing cables in pre-stressed concrete, conduit for electrical wiring, ducting for air-conditioning plants, radiant heating tubes, in slab floors, and as a replacement for metal pipe in normal cold water services.

Further Expansion Planned

At the present time, the Company is extending its activities to include the manufacture of glass-fibres and glass-fibre products. These will be used in the manufacturing industries and building trades as insulating materials for both thermal and acoustic applications.

Fibre-glass is made by melting pure glass and spinning it into millions of fine glass threads as fine as 1/15 the thickness of a human hair. The basic glass fibres are fabricated into various forms for insulation and are also used in filters and for reinforcing plastics.

The most modern overseas machinery will be installed by the Company, which will be known as Glass Fibres (New Zealand) Limited. This new company will make the fourth subsidiary of the Australian Consolidated Industries Group with operations centred at Penrose.

New Zealand Fibre Packages Pty. Ltd. has branch factories at Christchurch and Wellington.

The New Zealand Glass Manufacturers Co. Pty. Ltd. has a branch factory located in Christchurch.

"From little acorns . . ." is a proverb that springs instantly to mind as one views the tremendous industrial expansion of the three integrated companies of the Australian Consolidated Industries Group.

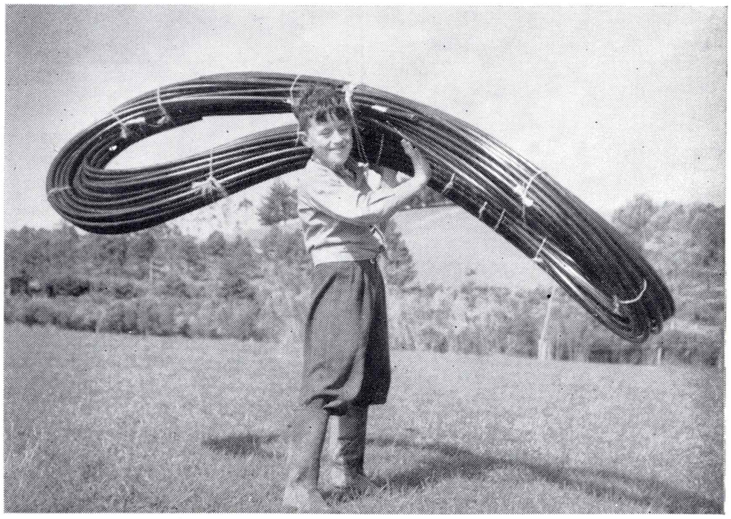
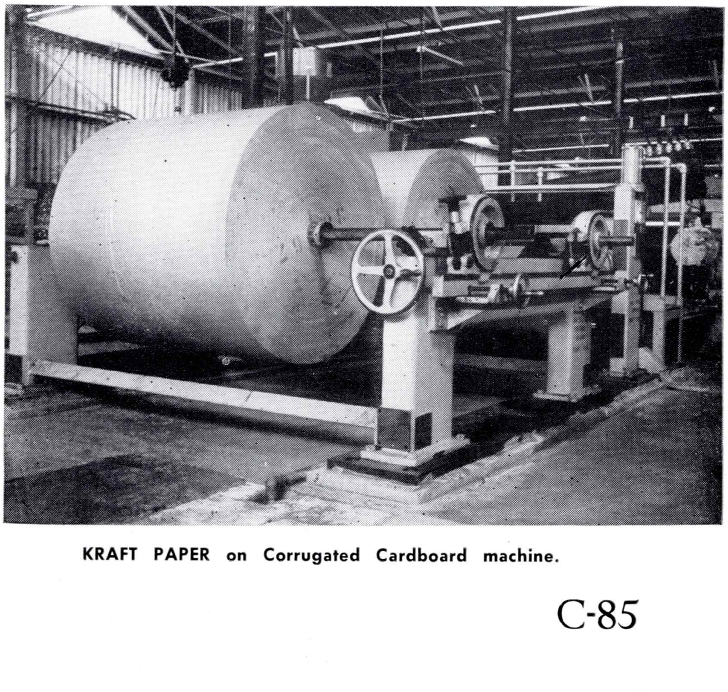


Illustration depicts extreme light weight of Contour Pipe.



KRAFT PAPER on Corrugated Cardboard machine.

LUDLOWS
PRIME MEAT
BAMBOO Restau
WEET-
MALTED

A vast range of Plastic Products

PLIX PRODUCTS LTD

Hastings

ILLUMINATED OR PLAIN EXTERIOR OR INTERIOR COMMERCIAL SIGNS MADE BY PLIX may be seen on business premises throughout New Zealand.

From the compact factory of Plix Products Ltd., situated midway between Hastings and Pakipaki, is pouring a tremendous range of plastic products for shops, offices, homes, and manufacturing industries throughout New Zealand. A jointly-owned New Zealand and Australian company laid the foundation of the present firm when, in 1946, it established Densified Woods (NZ) Ltd, in Hawke's Bay.

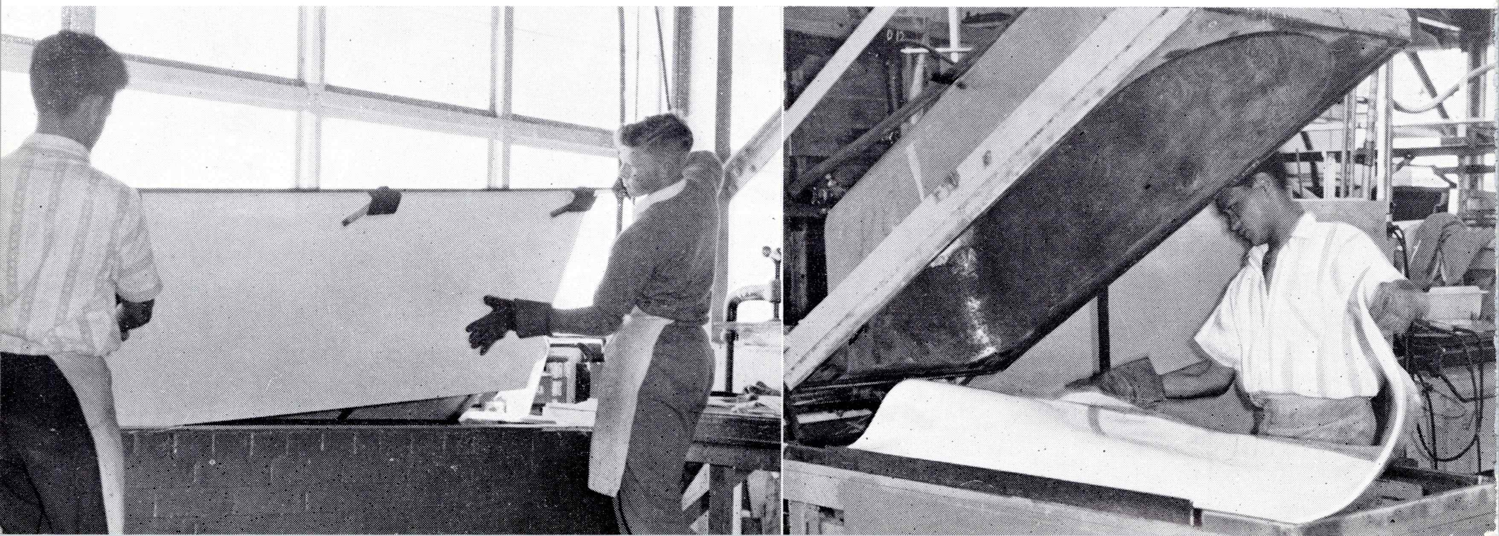
At that stage the factory was set up mainly to manufacture products from laminated plywood — turning out radio cabinets, tool handles, decorative panels, and other fancy wooden products.

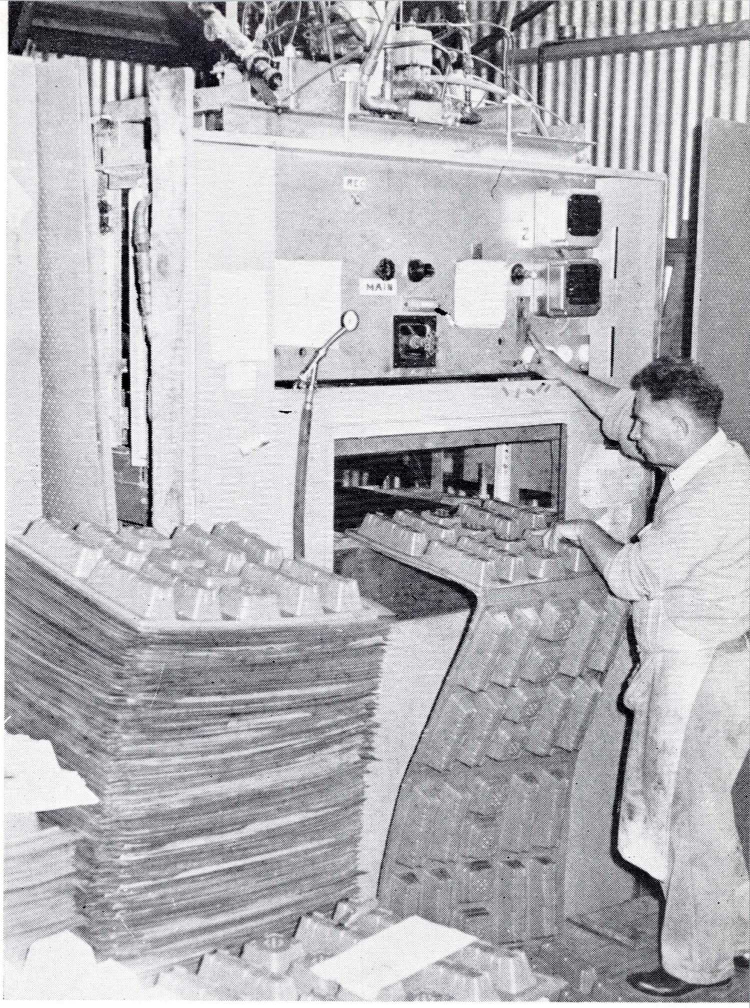
Later, Australian interests were bought out, and the company was re-formed as Wood Plastics Ltd. These were formative years with only modest successes.

There was a further change after 1948 when a decision was made to concentrate exclusively on plastic fabrication under the managership of Mr J. A. Dallimore—a former Department of Scientific and Industrial Research

(Left): **MOULDED FROM PLASTIC SHEET:** A few of the articles made in the Hastings factory include sink and pedestal, wash hand basin, sink.

(Below, left to right): **A BATH IN THE MAKING.** The entire process was engineered and perfected by personnel of the firm. (1) Placing the plastic sheet in the heating oven. (2) The pliable sheet being inserted in the vacuum moulder. (3) The bath is lifted from the mould after shaping. (4) A plug hole is drilled, installation bolts fitted, excess lip sawn off, and the bath is buffed, checked and packed for despatch.





MASS PRODUCTION: Strawberry punnets by the thousand are produced in this machine. Made of thin plastic, they are easily separated later.

engineer who had studied plastic manufacture in the United States.

Then the firm changed its name once more — to Plix Products — the trade name under which its plastic products had been marketed. Until three or four years ago, the firm was a private company, but it has since been registered as a public company with a big proportion of shares held in the Hawke's Bay - East Coast district.

More than 100 different articles are manufactured by Plix Products. Some are designed and made by the company to compete on the New Zealand retail market. Others are made exclusively for other New Zealand manufacturers — as components for their products. From the ovens and dies, sheet plastic is transformed into baths (complete with decorative side panelling), light fixtures, refrigerator or deep-freeze unit components, automobile fixtures, acquariums, food covers, photographic dishes, strawberry and seedling trays, caravan fittings, merchandise display units, and commercial name signs.

The factory employs a staff of 31. Some are employed in modern industry's repetitive machine processes; others are highly skilled in precision work such as the exacting task of making accurate dies for subsequent mass production of new products.

Plastics, explained the manager, Mr Dallimore, is a loose definition of a very wide range of materials.

'The word plastics conveys as much as the words metal or wood. The range is just as great. The thing to remember, however, is that plastics are synthetics — man-made — and with constant research, new compounds are being formulated or existing material modified.

'We are finding the trend for wider use of plastics is still developing. They can be tailored to do a job. That is one of their most important characteristics. As time goes on, there will be a far wider field for their use because science is continually improving their properties.'

Plix Products' raw material comes in the form of sheet plastic of varying thicknesses and colours. One of the most important materials is high-impact polystyrene.

Mr Dallimore explained its properties: 'You remember in the earlier days of plastics how brittle they were. Children's toys used to break very easily. Researchers have added synthetic rubber to the original product. Now it's much stronger. It has a greater resistance to high impact'.

One of the features of Plix Products is that a very big proportion of the plant was designed, manufactured, and assembled by Mr Dallimore and his staff.

A machine for stamping out strawberry punnets was made in the factory. Mr Dallimore explained that an imported machine for this purpose would cost £10,000. The Plix machine does not possess the finish of overseas makes, but it is completely efficient.

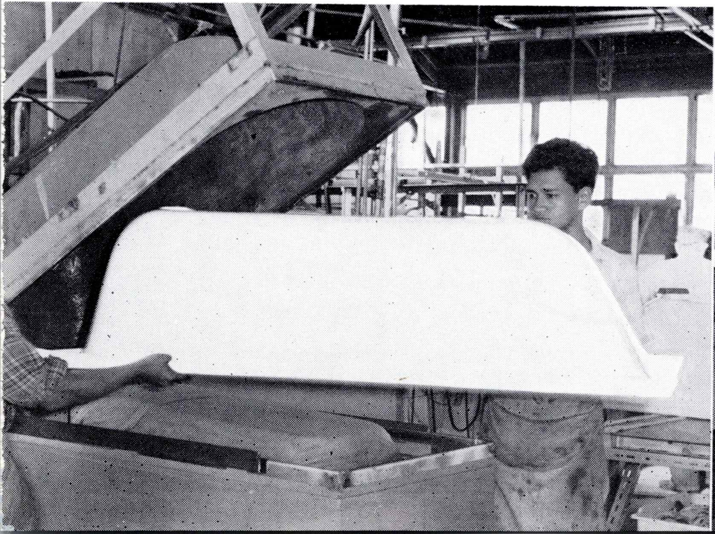
Baths are manufactured by Plix. Sheets of plastic are pre-heated in electric ovens, folded over a mould, then rapidly forced and sucked into shape. Every eight minutes a bath can be produced. 'They're strong, you can jump up and down inside one—there's no enamel to chip, and they are made in an attractive colour range,' Mr Dallimore explained.

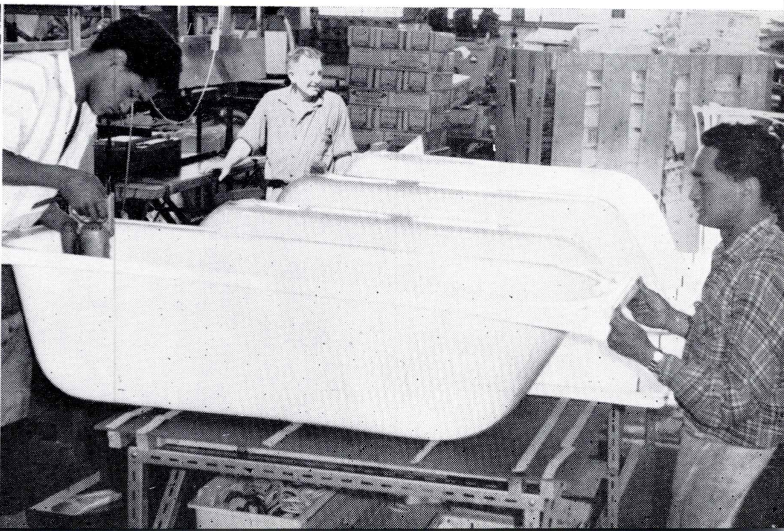
Although plastics have come into their own in the post-war years, the industry existed on a modest scale 33 years ago in New Zealand. In 1926 a Christchurch firm was importing casein and celluloid sheets for backing hair and clothes brushes. Earlier, New Zealand had an exporting interest in plastics through its trade in casein, a plastics raw material. Bakelite, another of the early plastics, was brought into New Zealand by an Auckland firm for incorporation into radio receivers and toothbrush handle manufacture.

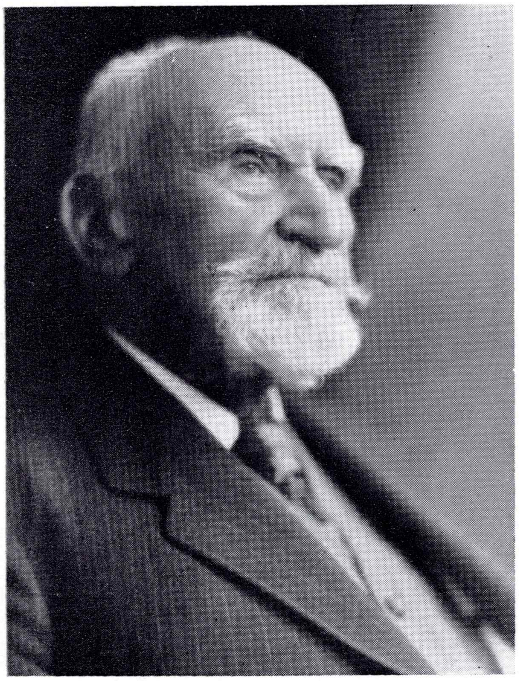
Plastics are now so widely applied, and have become so much a part of domestic and industrial life that it is difficult to draw up any really complete catalogue of their applications.

This is one New Zealand industry which is keeping pace with its counterparts overseas and growing with them.

Photographs: Hawke's Bay Herald-Tribune.





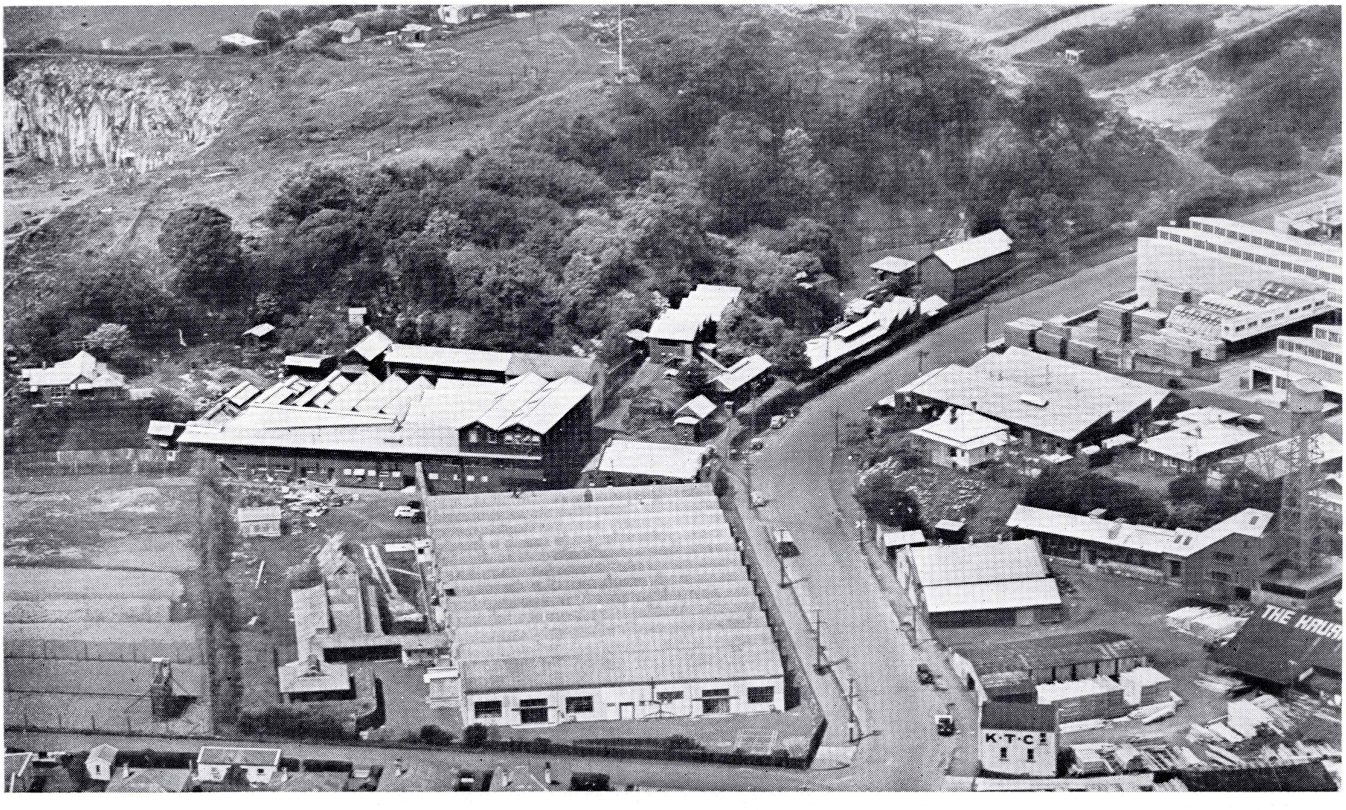


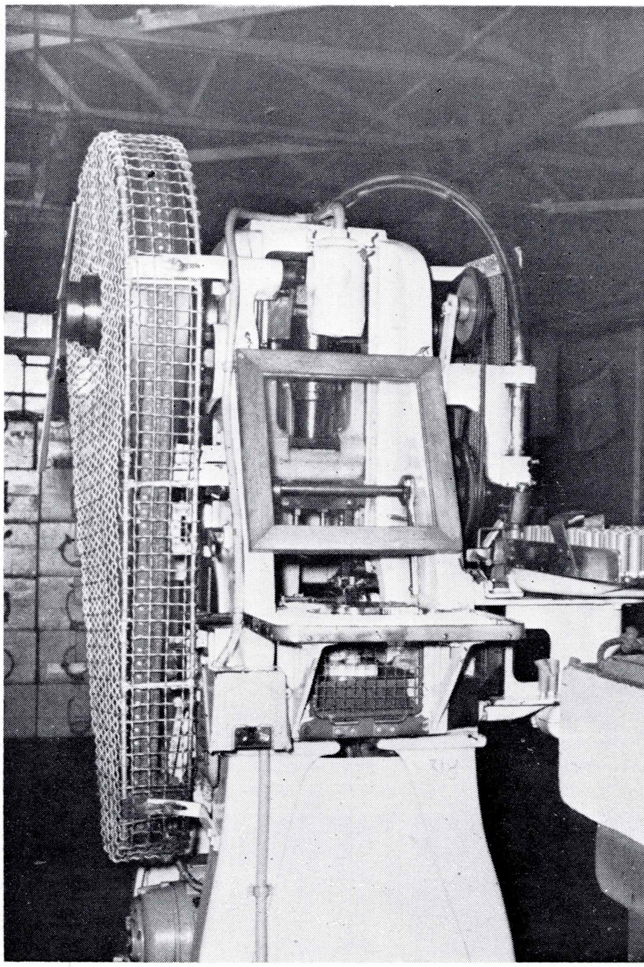
MAJOR JOHN WHITNEY
Founder

Patriotism started an important industry

THE COLONIAL AMMUNITION CO LTD

Normanby Road, Mt Eden, Auckland





CLOSE-UP of a machine which inserts shot-gun percussion primers.

About the turn of the 1880s there was a serious threat of war with Russia which, of course, would have involved New Zealand as part of the British Empire. The colony had a small regular force which was known as the Armed Constabulary and which was armed with the Snider .577 carbine. The authorities knew that if war really came it would be extremely difficult to keep up a supply of ammunition from England. One day a suggestion was made to Major John Whitney by a friend who said: 'There you are Whitney, you are a great rifle shot and have some engineering knowledge, why not start making cartrdiges for us?'

The idea appealed to Major John and he tackled the task in his methodical way by co-opting the services of a German named Teutonberg whom he knew to have worked for some years in a munitions factory in Germany. This man turned out to be a clever engineer, and was a tower of strength to Major Whitney.

A little later, the Major was joined in the enterprise by his two sons, the late Sir Cecil Whitney and the late Captain Asa Whitney. There was no building nor any place to put up the kind of works necessary for a dangerous industry. Finally, they were allotted about nine acres of very rough country at the foot of Mount Eden, which was covered by outcrops of great volcanic rocks. Every square yard had to be levelled with pick, shovel and barrow; but it was done, and the first building of the Colonial Ammunition Company erected. After unimaginable difficulties, the first batch of five thousand rounds was proudly offered to the military for 'proof' as the testing is called. It was condemned!

'We Will Make a Better Cartridge'

This blow should have been enough to discourage any further attempt to make military ammunition, but John Whitney was not the type of man to admit it. He started all over again with the unspoken resolve that has become a tradition of the Company: 'We will make a better cartridge.'

No sooner had the Company become established in the making of a good cartridge for the Snider rifle than the War Office adopted the .450in. Martini-Henry rifle. This meant that practically the whole of the laboriously built-up plant for the Snider had to be scrapped and the works re-equipped to turn out the new "small-bore", bottle-necked Martini cartridge. Again the young Company faced up to the task; and their cartridge met all the exacting requirements of the proof officers.

The Introduction of the .303

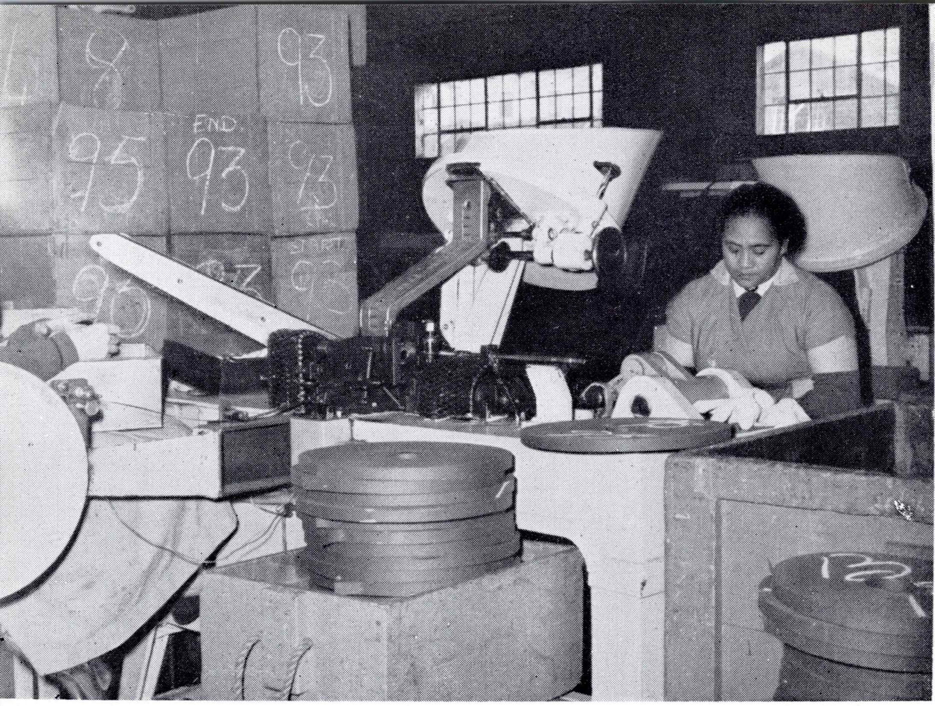
Another great change came over the manufacture of military ammunition when the .303 cartridge was adopted. Again all the machines were completely changed and many more were needed. The new bullet alone was made under an involved process that called for a specially trained staff of expert operatives. Whereas the Martini-Henry was a single piece of hard lead, the Enfield bullet was a two-metal at first, and a three-metal one later. The load was changed from black powder to cordite. The ballistics were revolutionised. The day of its adoption marked the end for all time of the heavy leaden bullet for the Army rifle. But this was not the end of the problem for the ammunition maker because new problems arose and new advances were made. Bullet speeds were again increased, which, of course, extended the effective range of the soldier's rifle and machine gun. Until this Mark VII was settled upon, there was hardly any period in the Company's history that was not bedevilled by constantly altering specifications and it called for the very best effort on the part of every man and woman in the plant to see that the extraordinarily high standards of precision were maintained.

Major John Whitney saw all these changes of models and equipment right through till the end of World War I. For all the period of that war, he saw the Company turn out many millions of rounds.

In Peace-time, New Lines to be Made

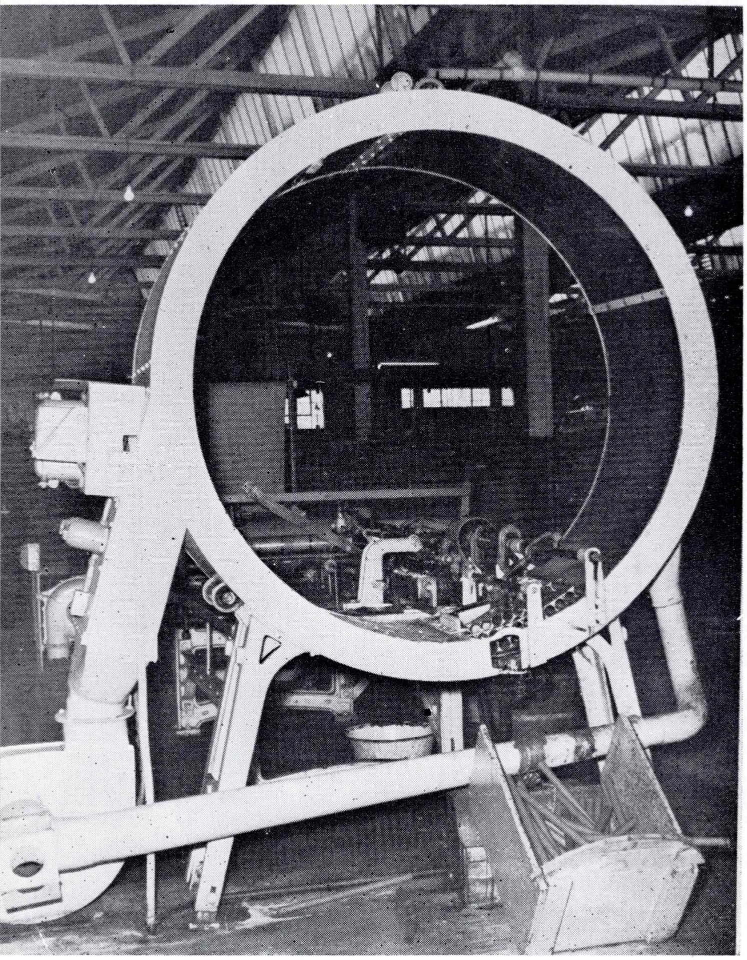
In many countries the factories for making military ammunition are either the property of the State or are heavily subsidised by the State during peace-time. With the Colonial Ammunition Company there is nothing of the kind. When the military contracts are reduced, the Company has to look for some other lines of goods to make.

It seemed quite logical to turn to the making of a cartridge for the sporting gun. This again must have been a terrific hurdle, as it has almost as many snags in its manufacture as the rifle cartridge. No one has been told of the long struggle to establish this part of the business on a payable basis. Sufficient to say here that this part of the enterprise was built up from a collection of machines from all over the world, it being impossible to purchase shot-gun cartridge plant from regular production. Each machine had to be individually built from equipment procured with great difficulty from Belgium,



THE MACHINE which winds paper (coils of which are to be seen in the foreground) and afterwards inserts and compresses it into the head of the 12 gauge cartridge.

END VIEW of the tube rolling machine showing the circular oven in which the wet tube is quick dried. Tube is seen deposited in receptacle below.



Germany, England and America. To this day, the same position obtains.

Today, the Company manufactures crown seals, plastic extrusion products, aluminium foil containers of many kinds, and many associated articles.

This is an enterprise that is still sound because of the rugged honesty and hard work that was put into the foundation in the first place by Major Whitney and his sons. It was Major John Whitney's patriotism that made him tackle what he must have known was a tough assignment. The same spirit caused him to extend his activities to Australia where, about the turn of the century, he founded the Ammunition Factory at Footscray, Melbourne. These works were taken over by the Australian Government during World War I, and are now of enormous proportions.

12 Gauge

In the 12 gauge department, between 40 and 50 operatives are constantly engaged in producing shot for ammunition for the local market. To meet this demand — which totals several millions — high production figures must be maintained on operations calling for complete precision.

The high standard of the work turned out is, in itself, a great tribute to the Company's staff.

Lipstick Containers

Lipstick containers are a natural 'follow through' to cartridge manufacture. In the C.A.C. factory, hundreds of thousands are produced for most of the world-famous cosmetic houses.

The highly polished mirror finish which each tube bears is attained by various treatments in the finishing department. Bright dipping, barrel tumbling, automatic polishing and lacquer spraying machines all contribute to the world-standard of the finished tube.

Plastic Pipe

C.A.C. entered the plastic field some years ago. Throughout New Zealand many thousands of acres of pasture are irrigated by means of the familiar C.A.C. pipe.

All sizes, ranging from ½in. to 3in. are produced in quantity for the many and widely divergent needs of today.

Metal Stamping

The call for transformer laminations, which demand the highest accuracy in metal stamping, has been answered in the newly established metal-stamping section. This completes a range of presses capable of stamping anything in metal from a steel trouser button to a shovel.

This affords great assistance to the many New Zealand industries engaged in metal processing.

Foiltainer

Marching with progress, C.A.C. is catering for manufacturers who are "packaging conscious".

Up-to-the-minute presses are stamping out 100,000 aluminium foil containers per day. From pie dishes to plates and strawberry chips, the range of patterns and dies is continually widening.

It is an odd thing, but every production machine has its own peculiar note and, in keeping with its speed and modernity, the foil press just keeps saying "sputnik, sputnik, sputnik".

Hard Chrome

This department gives a marvellous service to the engineering industry of New Zealand, but it doesn't make a profit.

It was not meant to be this way, but that is how it has turned out, and the Company is quite happy about it.

Tool Making and Plant Maintenance

C.A.C. has always been self contained as far as tool making and plant maintenance are concerned.

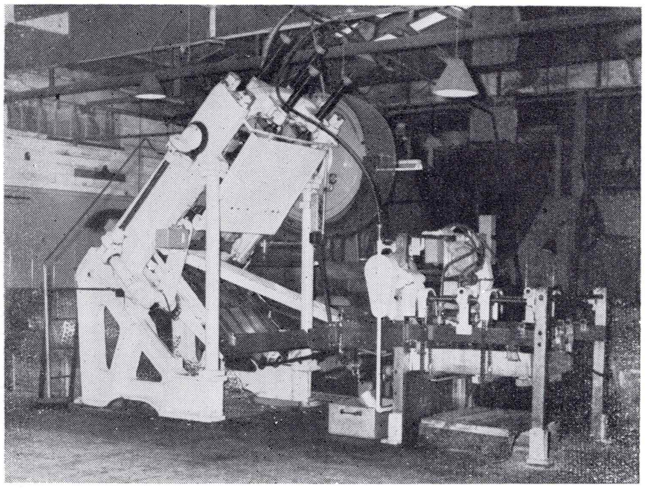
The continued success of the Company is due in no small measure to the remarkable skill and efficiency of its engineering staff. Equipped with plant as fine as any in the country, the Company's skilled technicians turn out each year a multitude of tools, all of which call for the finest tolerances.

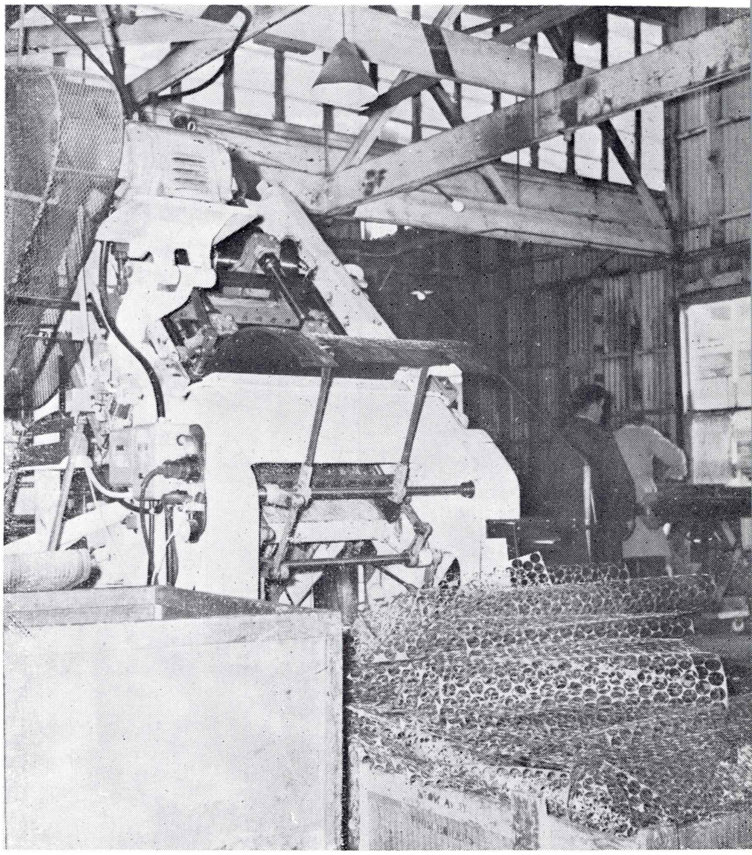
Plant maintenance is regular and, consequently, time lost is reduced to a minimum.

CAC
ALUMINIUM FOIL
CONTAINERS

C.A.C.'s highly outomatic and specially designed press used in the production of aluminium foil food containers.

TWO VIEWS of the crown seal press on which the very latest development of crown seal production in the world is undertaken.





D

PART D

Textiles
Leather Goods
Toilet Requisites
Brushware
Printing and Packaging
Sports Goods and Toys

General Manufacture,
including Goods not
classified elsewhere.

BATA COMPANY (N.Z.) LTD. Happy Valley, Wellington.

The establishment of the Bata Company in New Zealand, almost 12 years ago, began the most recent chapter in the re-establishment of the world-wide Bata organisation since the war. Founded by the late Thomas Bata, killed in 1932 while flying his private plane to Switzerland, the Bata organisation was, before the war, the largest shoe manufacturing and distributing organisation in the world. When war intervened, many Bata factories in occupied countries were destroyed, or taken over by invading forces, including the tremendous shoe factories in Zlin, Czechoslovakia, and many more in Europe and the Far East. A large number of Bata employees were killed while serving in the Armed Forces, and a number disappeared in concentration camps. After the war, all factories behind the Iron Curtain were nationalised. The vast pre-war Bata organisation was severely reduced in size.

MR. E. HOLECEK, Managing Director of the Bata Company (N.Z.) Ltd.

In 1945, after service as a captain in the Canadian Army, Thomas J. Bata, son of the founder, took control of the organisation determined to build it up to its pre-war status. By touring displaced persons camps, Thomas Bata gathered together such of the original Bata employees as were left. Then he and his associates set to work to create and re-organise the Western Bata Organisation. Today, this shoe Commonwealth extends throughout the world, with 53 factories in over 35 countries and retail outlets in over 80.

INDEPENDENT YET INTER-DEPENDENT

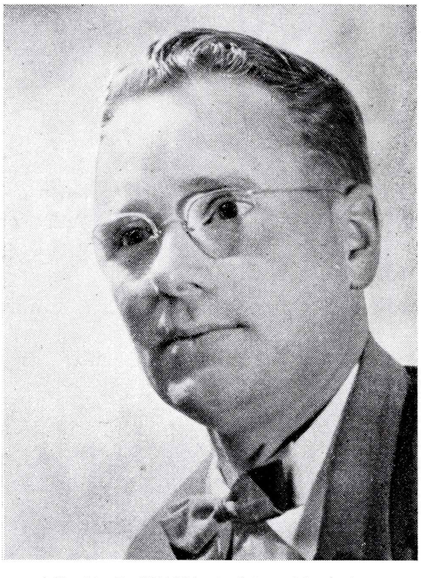
Every new Bata Company is expected to work independently right from its inception. Yet, to do this, it must rely on the international planning inside the Bata organisation. Specialised training facilities, including Bata training colleges, are open to future Bata key men. Every Bata executive is fully trained in all aspects of shoe manufacture and distribution, from machine operation and machine shop procedure to office administration and marketing of goods. Inside the Bata Organisation, almost everything from the lasts to the cash registers is compatible. This leads to almost complete uniformity between each company. Due to this Bata policy a new company could be completed tomorrow, in entirely new territory, and in a matter of hours could be functioning as well as one of the original companies. Executives and key men from any part of the organisation in the world could be rushed to the new plant and immediately take up their allotted tasks, without delay, without any "settling in" period. This accounts for the Bata Organisation's status among the great mass-production companies of the world: all parts of the organisation are inter-changeable, yet every company exists completely independently of the rest of the organisation.

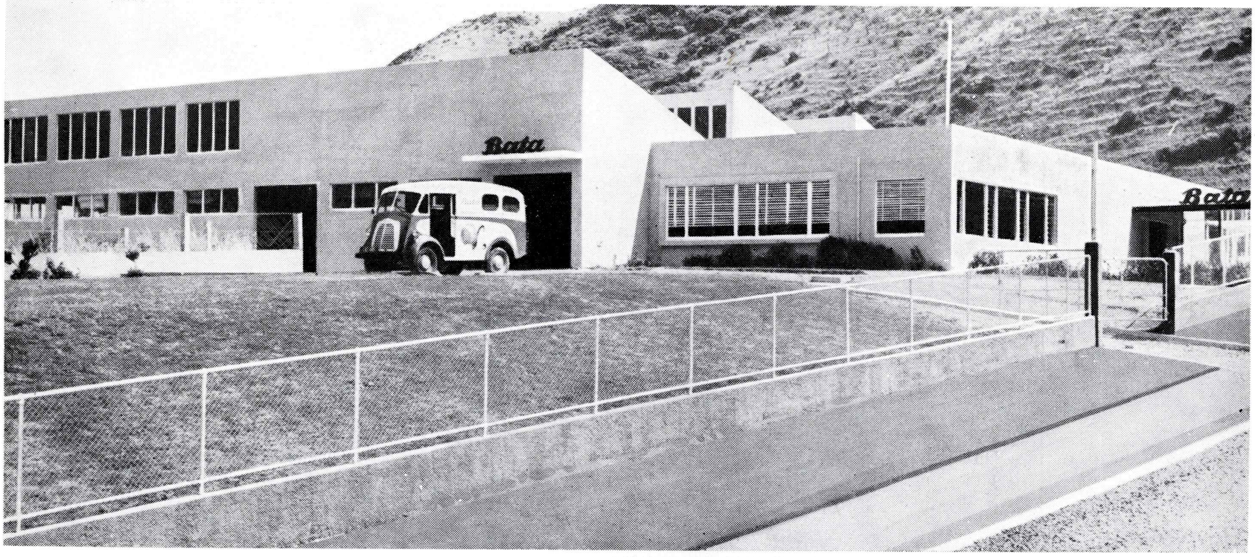
The reason for the Bata policy of independent companies arises from the fact that, during both Wars, companies isolated by occupying forces had to close down completely, as essential materials could not be obtained. With almost every Bata Company now having direct access to a source of raw materials in the area in which they operate, this could not happen. The Bata Organisation would continue to function in its entirety regardless of circumstances.

Yet another reason for independent Bata Companies could be found in the basic Bata policy, which has guided the Bata Organisation since its foundation by Thomas Bata.

"Our idea is to render a service to the community. This was the idea instilled in me by my father, the founder of our business. It is still my guiding philosophy. Our service to the communities where we live and work is to produce good shoes and sell them at the lowest possible price; to make shoes available to everyone and, in so doing, be a partner with the rest of the people who are trying so hard to build up their communities."

Those words were Thomas Bata's answer to the question "What is your basic idea?" To render a service to the community, every Bata Company must be completely independent. It must be able to recruit its workers, and even its key staff, from residents of the area in which it is situated. It must have access to raw material in surrounding districts. And it must be able to design and market shoes made specially for local conditions—at the lowest possible price. All Bata Companies can claim to have fulfilled this basic Bata policy.


MR. H. F. FINCH, Assistant Managing Director of Bata Co. (N.Z.) Ltd.



BATA COMPANY (N.Z.) LTD. PLANT IN HAPPY VALLEY, WELLINGTON

WHAT ABOUT PROFITS?

You may think that such a large organisation would have a vast margin of profits, and if you do you're not far wrong. But Thomas Bata's answer to the same question is a quotation from Henry Ford, who brought cars to the millions: "If you serve the public instead of trying to exploit it, you will have only one problem about profits—they will be embarrassingly large. You can get rid of the embarrassment by ploughing them back into further service to the public. So there's no problem."

BATA — NEW ZEALAND

The New Zealand Bata Company is one of the youngest and smallest branches of the organisation. Founded 12 years ago by Dr. F. A. Mencik, a member of the Bata organisation since its early days just after the war, the Bata factory in New Zealand has been located in Happy Valley, Wellington, since its inception and has grown to become the major industry in that area.

The Bata plant in Happy Valley began production with the well-known Spongee slippers in women's "Collar" and men's "Alberts" styles, and children's ankle bar. These lines, which introduced the famous Bata multi-layer sponge rubber sole, have been steady sellers since they first appeared on the New Zealand market and are still among the highest-selling Bata designs in this country. Other articles since introduced and now widely known throughout the country are Bata Casualees, Warmies, Bumpers and Ballerinas.

Expansion to accommodate new Bata products is simplified by the practical design of the Bata factory. The factory is so laid out that a new wing can easily be added to allow expansion. Since the erection of the original Bata factory, several new departments have been created, each one signifying increased production. The most recent addition to the factory was made to accommodate specially-designed machinery for the manufacture of Bata "Rainguard" gumboots, which are the latest Bata product to be introduced to the New Zealand market. Still further expansion is planned as Bata design more footwear for New Zealand conditions.

CLOSE, FRIENDLY ASSOCIATION THROUGHOUT THE WORLD

Dr. Mencik, the founder of the New Zealand Bata Company, and a New Zealand citizen for several years, left New Zealand four years ago to take charge of the vast Bata organisation in South America. At the same time, the present manager of the New Zealand Company, Mr. E. Holecek, arrived in New Zealand from India to assume control of the New Zealand Company. Mr. Holecek had spent most of his 27 years' service with Bata in India, and the Far East and, therefore, with this exchange of personnel, a friendly association was created between Bata New Zealand, Bata India and Bata South America. The same system of staff transfer is in operation between Bata units throughout the world, reinforcing the already existing close liaison between all Bata companies, by personal links. This pays off in adding up-to-date technical information and advice from each area to that already obtainable from all parts of the world-wide organisation.

Sales Manager and Director of Bata Company (N.Z.) Ltd. is Mr. H. F. Finch, a New Zealander, who commenced his service with the Bata organisation at the establishment of the New Zealand branch. New Zealanders also head the other departments, and this illustrates the basic policy of all Bata units — where possible, all personnel shall be recruited from the country in which the unit operates, so that development runs parallel to, and in close association with, the life of the community.

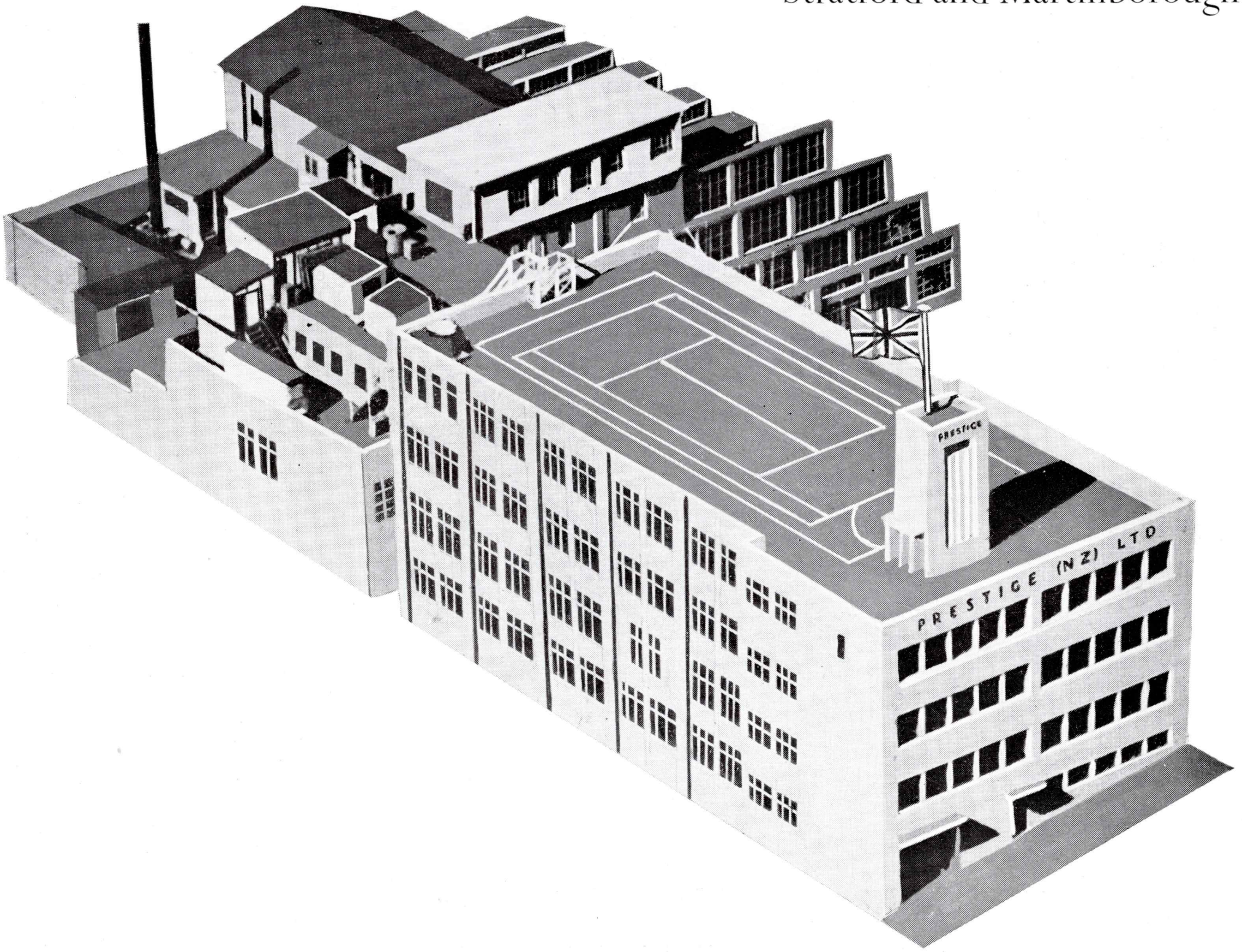
BATA POLICY OF SERVICE

From the time Thomas Bata began to manufacture shoes until the present day, the general well-being of the employees of the Bata organisation and the communities which it serves has been held far more important than material gains. The majority of profits made are invested in developing better machinery to enable an even higher standard of quality to be reached, in improving working conditions in the many Bata factories, and in bettering public relations throughout the world. Bata today is an organisation of which Thomas Bata, Senr., a man of high principles and unselfish devotion to his fellow men, could well be proud.

The present head of the vast Bata Organisation, Thomas Bata, recently visited New Zealand on his continuous tour of inspection of his Shoe Empire.

PRESTIGE (N.Z.) LTD.

31 Pirie Street, Wellington
Also:
Stratford and Martinborough



Prestige (N.Z.) Limited, founded 25 years ago, had its real beginning with the opening of the New Zealand Hosiery Mills in 1928. Today, Prestige manufactures the largest range of hosiery in this country, servicing women of every age group, and the Wellington and Stratford mills, with over 300 employees, are among the best equipped and most modern factories in New Zealand.

New Zealand women have rightly come to associate the name Prestige with superior quality hosiery and lingerie of the very highest standards.

A Reputation Not Lightly Earned

This reputation, the culmination of years of effort and progress, has not been earned lightly: from very modest beginnings Prestige has improved and perfected its technical processes over the years, until today its products are admittedly equal in fabric, type, workmanship and finish to anything produced anywhere in the world.

In order to achieve these results, Prestige (N.Z.) Limited, has imported the most modern machinery and equipment, and the company is constantly in touch with overseas industrial and technical developments and fashion trends.

The nylons and specially treated yarns used in the various processes are imported from the United Kingdom and the United States.

Staff Amenities

The Company realises that no industry can function successfully unless its personnel is well-looked after and contented, and in this Prestige (N.Z.) Limited has spared no effort.

The spacious workrooms are tastefully decorated with attractive colour schemes, and the staff amenities in all departments are excellent. To add to the comfort of the staff, air conditioning is installed throughout the plant, and American-style iced drink machines are in use. A large, airy sick-room is provided for any emergencies which may arise, and there is a spacious cafeteria with formica-covered tables, and tiled floor. There is also a piano for staff use.

An Intricate Manufacturing Process

The process for the manufacture of nylon fully-fashioned hosiery is an intricate one, which involves no less than 10 separate operations.

The huge, fully-fashioned knitting machines are specially imported by Prestige (N.Z.) Limited from the United States. Each machine is 53 ft. long, 6 ft. wide, 6 ft. high, and weighs approximately 14 tons. These machines knit 30 well-tailored fully-fashioned stockings at a time, taking 35 minutes to complete the operation; thus, each machine produces approximately 75 dozen pairs of stockings in a 40-hour week. They are fully automatic, doubling the welts and tapering the stocking from 560 stitches at the top of the leg, down to eight stitches at the toe; they also change from one type of yarn to another for the heels and feet and require very little attention.

Work for Nimble Fingers

The stockings are then examined for possible faults before being seamed, the examiner smoothing them out with a clear plastic "iron". In the finishing room, nimble-fingered girls, working at individual tables, machine seam and trim the stockings.

Once again, the stockings are examined; this time they are slipped on to an expanding shape and 30 lb. pressure stretch is put on them to show up any flaws which may have developed. A photo-electric cell registers the number of stockings that go through this machine, the number showing up on an indicator which is incorporated in it.

'Shapes' Come off the Machine

Next comes the pre-boarding process. The stockings are slipped on to smooth metal shapes which slide together as they move into the huge machine, where they are set by pressurised steam at a temperature of 260°F. for one and a half minutes. This operation, too, is entirely automatic, and when the setting process is completed the shapes emerge from the opposite side of the machine and open out again to facilitate the removal of the stockings by hand.

Dyeing follows, and, in the laboratory, chemists are constantly testing and improving the efficiency of the dyes. To avoid damage and to ensure evenness of colour, the stockings are slipped into nets before immersion in the dye baths. After dyeing, excess moisture is removed in hydro extractors, and the stockings are then given a final pressing.

No Damage from Rough Skin

In the well-lit folding-room, teams of girls work together, the first girl grading the stockings, the second folding, and the third wrapping. A special hand-cream is supplied to the staff to avoid the possibility of the stockings being damaged by rough skin.

Other girls apply transfers indicating the size and type to the welts of the stockings; they are then packed in boxes (also manufactured here), and are ready for despatch.

Following their tradition of leading in the hosiery fields in this country, Prestige has introduced the latest in sheer hosiery—474 Needle Seamless stockings. To enable them to do this, a modern factory has been erected adjacent to the lingerie plant at Stratford; it is on model lines, following the most up-to-date overseas designs and is the equal of any factory of its kind in the world. In this factory the very latest 474 Needle Scott & Williams Seamless hosiery knitting machines have been installed, and these are manufacturing seamless hosiery to a standard of quality not seen before in New Zealand—a first in the manufacture of this type of stocking.

The offices of the Company are modern and well-designed, and there is a showroom in contemporary decor with a most attractive stage for trade shows and displays of lingerie and hosiery.

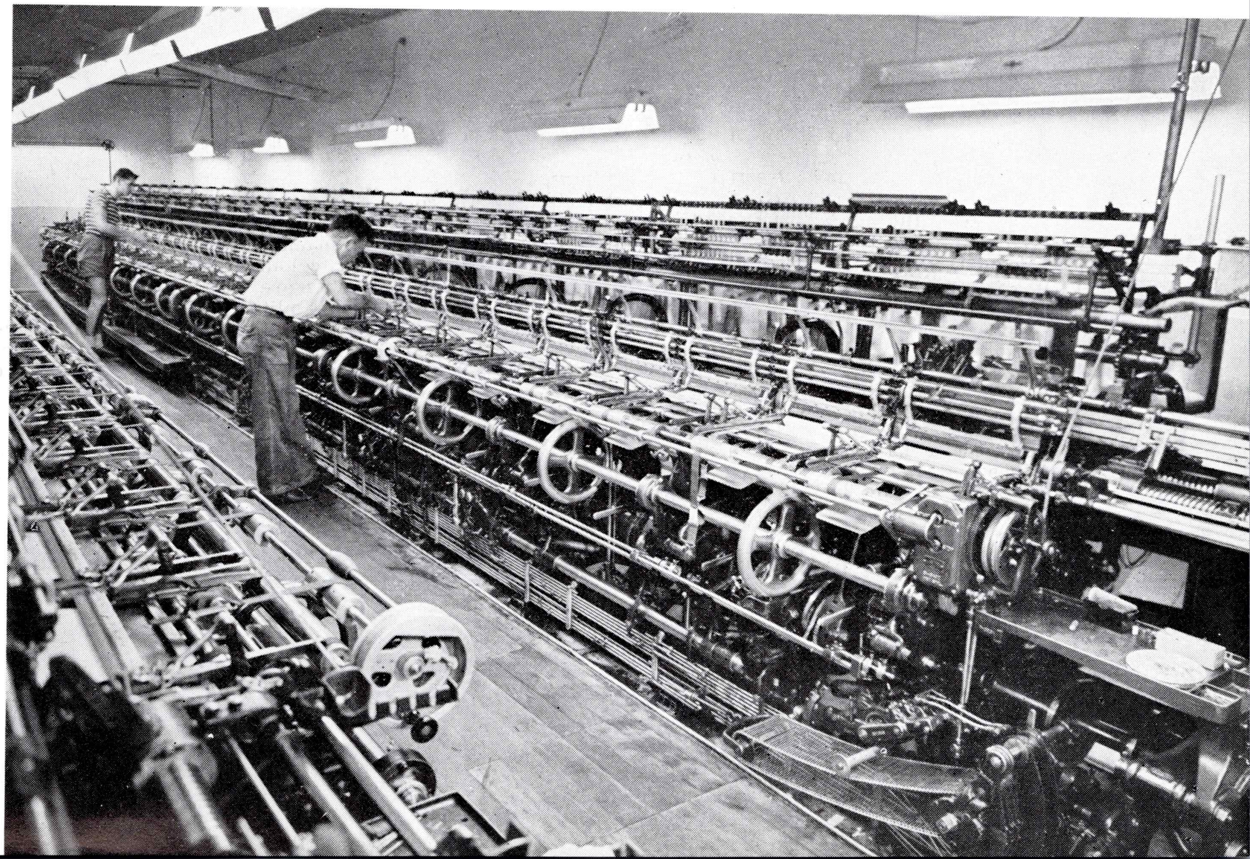
"Your Measurements in Inches"

The lingerie division, employing approximately 100 people, is equipped with the very latest of making-up machinery. Fabrics from England and the Continent and U.S.A. are combined with trimmings, laces and embroideries from all parts of the world to make Prestige lingerie equal to the finest lingerie offered on the world's market and, as with the manufacture of hosiery, every attention is paid to quality. The Prestige Company, with a flair for providing exactly what is wanted, was the pioneer of "Your measurements in inches", and, from the exclusive range of princess slips, pantees, briefs, scanties, nightgowns, pyjamas and housecoats, not only are the more usual sizes available, but large women, small women, tall women and short women, can obtain perfect fittings.

Another factory is situated in Martinborough, and today, after 30 years of progress and expansion, Prestige, with three factories, and branch offices throughout New Zealand, is regarded as New Zealand's leading manufacturer of quality hosiery and exclusive lingerie.

The Board of Directors of Prestige (N.Z.) Limited is as follows:—

Mr. G. G. Foletta, Chairman of Directors.
Mr. B. W. Thorpe, Managing Director.
Mr. N. B. Aldridge, Joint Managing Director.
Mr. J. B. Hatrick.
Mr. E. A. Foletta.



SUCKLING BROS. LTD.

18 Dundas Street,
Christchurch

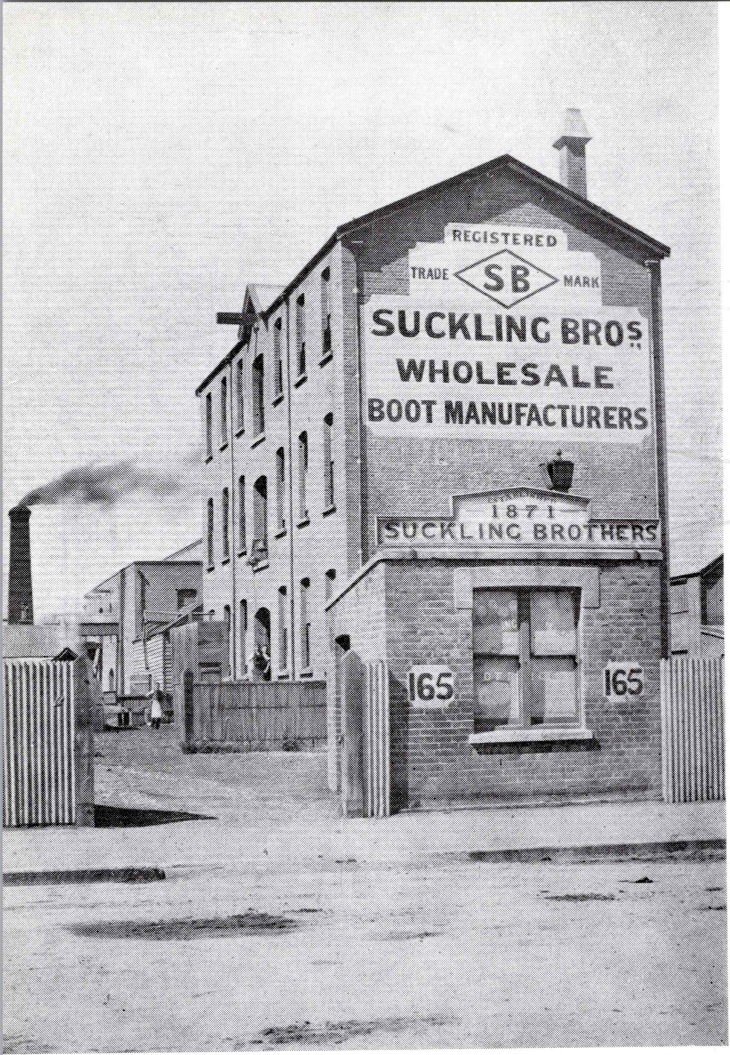
In the early history of manufacturing in Christchurch, the boot and shoe industry was one of the first to become well established. The oldest firm surviving today, and one which forms a large part of the industry, is that of Suckling Bros. Ltd., founded in 1871 by Mr. Nathaniel J. Suckling and Mr. John Suckling, under the name of N. J. Suckling and Co. In 1883, the name was changed to its present form.

There are few details of the early life of the two Suckling brothers, but it is known that Mr. N. J. Suckling came to New Zealand in 1861 at the age of 17. His brother John arrived in 1865. It is on record that John Suckling was making and selling boots in 1866, and that he collected several awards for good bootmaking at the Dunedin Exhibition in the late 1860s.

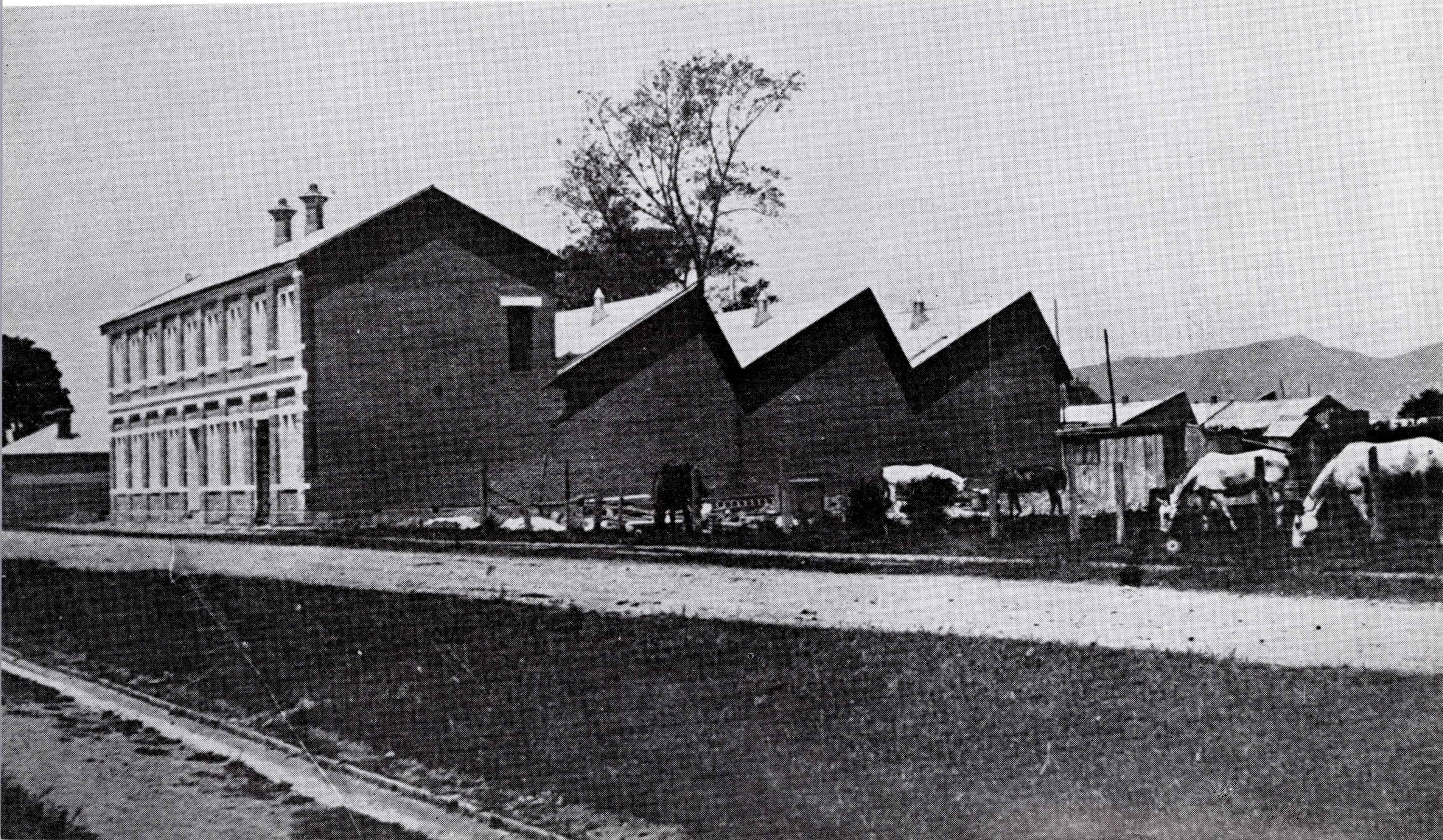
By 1871, the two brothers were in partnership as wholesale boot manufacturers—first in St. Asaph Street, Christchurch, and later, in Tuam Street (see photograph, left).

In 1898, the factory was moved to Dundas Street, the present-day site. At that time, Dundas Street was on the outskirts of the city and many of their friends doubted the advisability of their venturing so far from the business centre of the town. The difference between Dundas Street then and now can be seen from the two photographs.

The Company was incorporated in 1915, with the addition of Mr. J. S. Polson as the third shareholder.



TUAM STREET, CHRISTCHURCH: The second factory operated by the Suckling brothers, Nathaniel and John, early footwear manufacturers. Below is a photograph of the Dundas Street premises in 1898, then on the outskirts of the city. Friends doubted the advisability of a move which took the factory so far from the Square.



MONARCH
Shoes
SUCKLING BROS. LTD.
SUCKLING BROS LTD
P 60

THE DUNDAS STREET FACTORY TODAY. Over the years, vast changes have taken place in the type of footwear produced and the methods employed in meeting the demands of a rapidly expanding population.

Changes in Management

Mr. John Suckling died in 1918 and Mr. Nathaniel Suckling in 1920. Mr. Polson, the remaining original member, carried on as Managing Director until 1929. At his death in that year, Mr. J. A. East became, and remained, Managing Director until his decease in 1948, when Mr. T. G. Shanks, the present Managing Director, was appointed to take his place.

While the Company has enlarged its directorate from that of a family concern, various members of the families of the two original Suckling brothers still play an important part in the firm. Mr. H. E. Suckling, a son of the late Mr. John Suckling, is the present Chairman of Directors, and Mr. C. G. B. Suckling, a grandson of the late Mr. Nathaniel Suckling, is a director. Mr. F. G. Suckling, a grandson of Mr. John Suckling, is the secretary of the Company, and Mr. G. W. Suckling, a grandson of the late Mr. Nathaniel Suckling, is in charge of the Purchases and Raw Materials Store.

Landmarks

In the progress of the Company over the years, there are certain clear landmarks which have had a large influence on the history of the Company: the erection of the first building in Dundas Street in 1898; incorporation of the Company in 1915; the enlargement of the building at the end of World War I, and its further enlargement in the early 30s and, finally, in 1939. But the most important landmarks are concerned with the revolutionary changes in the methods and kinds of production over the years. For many years, boots, particularly working boots, were the main product. These were made mainly by hand, but the introduction of machinery in the 90s, and later, caused some great changes. By 1920, the firm was concentrating on the production of high quality men's and ladies' shoes, particularly the latter.

Mass Production Methods Arrive

The greatest change of all occurred, however, when Mr. J. A. East took charge of the Company in 1930. A policy of concentration on men's welted shoes and of mass production was adopted, and the results over the years were phenomenal. The production figures of the Company grew from 46,000 pairs in 1927 to a present-day production of approximately 270,000 pairs. To cope with the demand over the years, since 1898 the factory has been trebled in size.

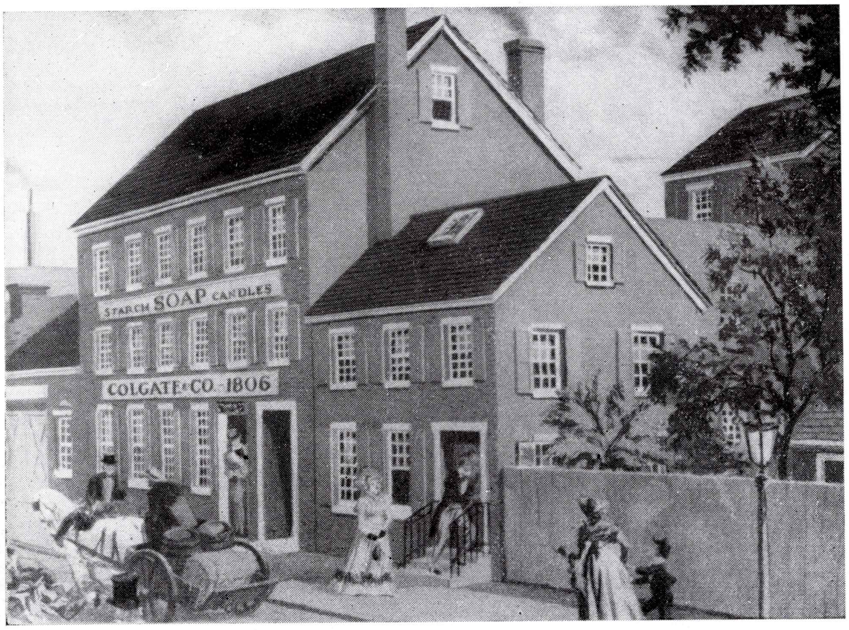
It is interesting to note that the greatest period of expansion was during the 30s, when the only protection enjoyed was a moderate tariff, and competition from overseas was very strong. During this time, the Company coped very successfully with strong overseas and internal competition and became the dominant factor in the manufacture of men's shoes in New Zealand.

Footwear for the Forces

The Company did its share of vital production work during the difficult years of World War I, and, during World War II, the size and productive capacity of its factory and plant enabled it to provide the greater quantity of footwear required for the Armed Forces of this country.

The Company's policy over the years has been to keep its plant and productive methods completely abreast of modern trends, and, when the present Managing Director was in England in 1955, after visiting many factories, he noted with interest and pleasure that no factory making welted footwear was more up to date than Suckling Bros. Limited; in fact, quite a number of factories, whose products are household names in England and overseas, had plants which could not compare favourably with that of Suckling Bros. Limited.

In New Zealand, the footwear branded Landmark and Monarch has established itself as standing for quality and good value, and is proving acceptable to both retailers and the consuming public.

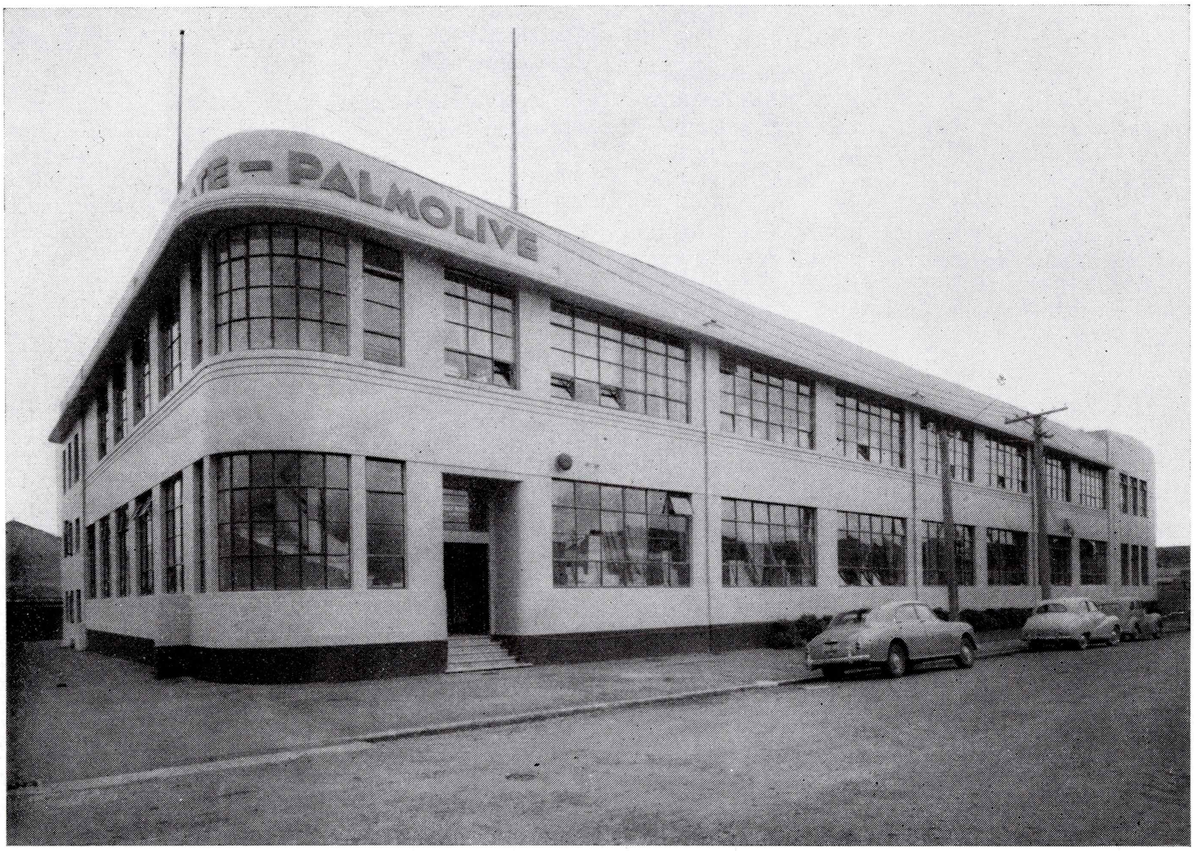

STARCH SOAP CANDLES
COLGATE & CO. 1806

THE ORIGINAL COLGATE BUILDING IN DOWNTOWN NEW YORK, where William Colgate manufactured soap and starch.

COLGATE-PALMOLIVE LIMITED

Nevis Street, Petone,
New Zealand

COLGATE-PALMOLIVE HEAD OFFICE AND FACTORY AT PETONE, a few miles from Wellington, handy to road and rail transport and close to the Petone foreshore.


TE - PALMOLIVE

Colgate-Palmolive Company is one of the world's leading manufacturers of soap and toilet articles. The executive offices are located at 300 Park Avenue, New York, and the principal plant is located in Jersey City, New Jersey, U.S.A. Other domestic plants are located at Jeffersonville, Indiana; Kansas City, Kansas; and Berkeley, California. Foreign operations are carried on through subsidiaries and agencies located in almost every country in the world and also through the Company's export department.

The present Colgate-Palmolive Company represents principally an out-growth of the businesses of The Palmolive Company, Peet Brothers Company, and Colgate & Company.

The earliest record of these companies starts with William Colgate in 1806. Very few companies world-wide can lay claim to celebrating their 150th Anniversary, which was the case with Colgate-Palmolive last year. After a period of apprenticeship in soap making in Baltimore, William Colgate moved to New York and, at the age of 23, opened his own soap making firm, located on Dutch Street in downtown New York. Initially, William Colgate manufactured soap and starch, which was sold door-to-door to neighbouring housewives and to sailing ships calling at the New York harbour.

The New Zealand Company, which is called Colgate-Palmolive Limited, commenced operations in New Zealand as The Palmolive Company, in 1928. At that time, operations were on an import basis entirely. From that time up until 1939, it was a branch of the Australian Company. When the amalgamation took place with the Colgate Company, the name was changed to Colgate-Palmolive Proprietary Ltd., and, later, when the decision was made to commence manufacturing in New Zealand in 1939, the name was changed to Colgate-Palmolive Limited, as it now stands, and from then onwards was incorporated as a separate Company. Operations on a manufacturing basis were commenced in 1940.

The site chosen was at Petone, a few miles from Wellington, handy to rail and road transport and close to the Petone foreshore. It was fitting that the subsidiary of such an old-established Company should decide to build within a stone's throw of where the first settlers arrived on the Petone foreshore.

The original building was a U-shaped one, two storeys at either end, and 15 months after this was erected a further extension took place, making a completely two-storeyed building; since then, further additions have been completed.

Apart from this plant, which houses all the production facilities and offices and is the headquarters for New Zealand, warehouses are operated in Auckland and Dunedin, and in Christchurch stocks are held for that area.

All of the products marketed in New Zealand, with the exception of one, are manufactured or processed here at Petone. The list includes:—

> Palmolive Soap; Cashmere Bouquet Soap; Protex Soap; Ajax Cleanser; Colgate Dental Cream; Palmolive and Colgate Shaving Preparations; Halo, Lustre-Creme and Palmolive Shampoos; Palmolive and Colgate Hair Preparations and Toilet Articles; Cashmere Bouquet Cosmetics and Toilet Articles, and several industrial lines.

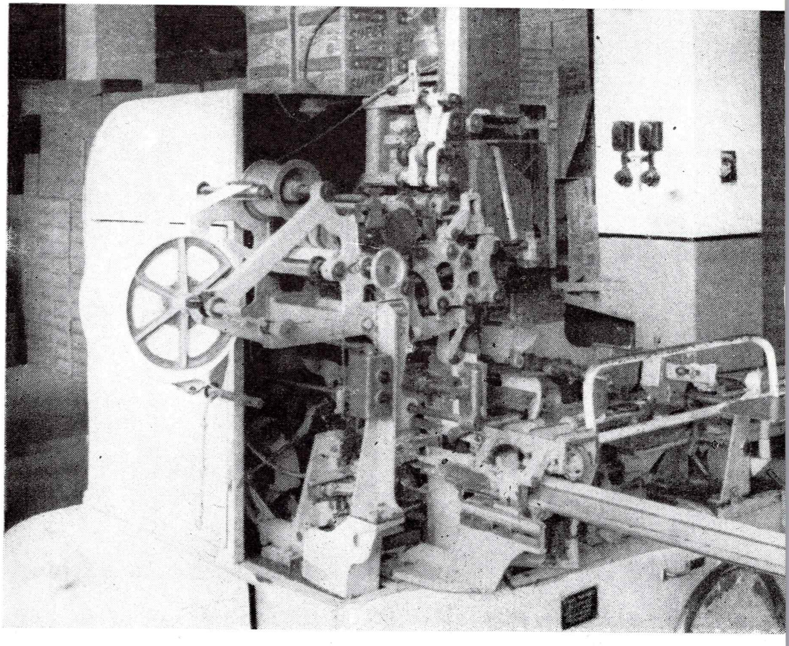
Since commencing manufacture in New Zealand, the Company has never looked back, but has made very rapid advances each year. Indications are that still further development will take place with the introduction of new lines and additions to those existing.

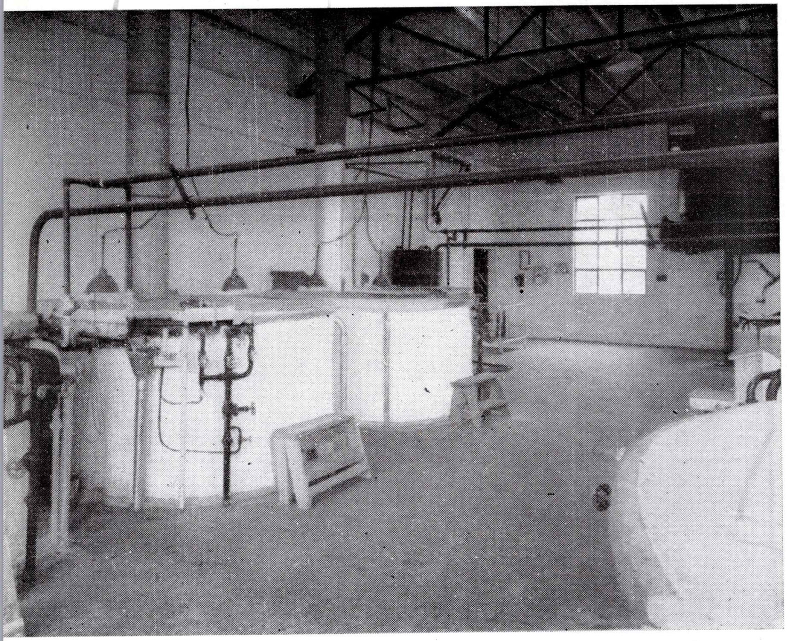
As many raw materials as possible are obtained

(Continued)

IMPROVED-TYPE TUBE FILLING MACHINE in operation at the Petone factory.

WRAPPING SOAP BY MACHINE. In the early days, this product was wrapped by hand.





KETTLE ROOM — For soap boiling and processing.

locally; others are imported, of necessity, from Australia, the United Kingdom, America, France and various other foreign countries.

As the years have progressed, many new equipment advantages have been installed:—

The change-over from hand-wrapping of soap to machine wrapping.

Improvements in tube filling.

The very latest equipment for bottle and jar-filling, and very efficient processing machinery for powders and cosmetics.

A strict control is kept from the laboratory on all products and also on the raw and packing materials as they arrive at the plant.

As is the case with all other subsidiaries of the Company, a second control is in operation whereby a check is kept by virtue of production samples being sent to headquarters in New York and Jersey City.

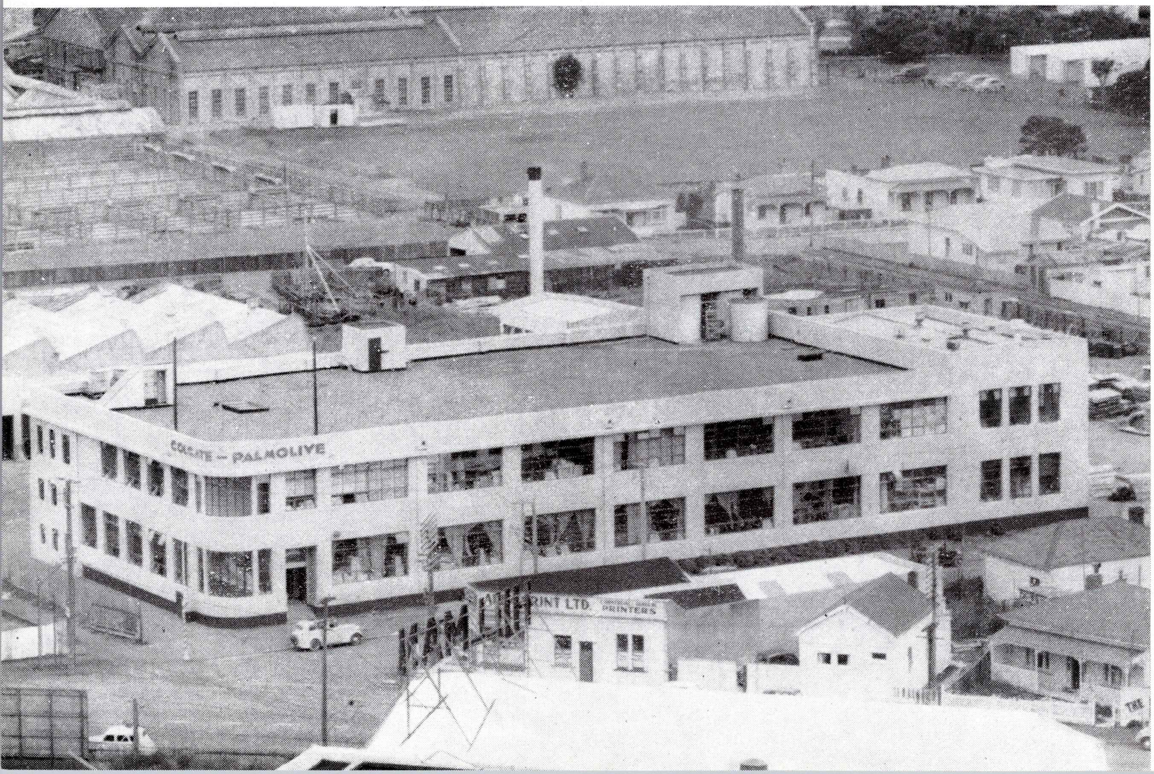
In reverse, of course, the Company in New Zealand gets the benefit of the research conducted by the Parent Company and by other larger subsidiaries throughout the world.

Frequent visits from overseas personnel and visits of domestic personnel to locations overseas and Head Office give them an interchange of planning and thinking, and the products manufactured and marketed are to the same formulae and procedure as with the rest of the companies overseas.

The local directors and executive are as follows:—

Mr. J. A. Jacques,	Managing Director, Chairman and representing the Parent Company.
Mr. D. F. Collinge,	Director, Office Manager and Secretary.
Mr. W. J. Dixon,	Director, and Factory Superintendent.
Mr. D. R. Richmond,	Director and Company Attorney.
Mr. P. E. Bowen,	Sales Manager.

AN AERIAL VIEW OF THE COLGATE-PALMOLIVE FACTORY.



1000 Different Types of Brooms, Brushes, Mops

OTAGO BRUSH COMPANY LTD

135 Great King Street, Dunedin

The Otago Brush Co. Ltd. was established in the year 1880 by Mr. A. C. Broad, who came from England and set up in his trade as a brushmaker. With him he brought materials and hand tools of trade required for the manufacture of the brushware of that period.

Reliable records are not available, but it is understood that the Company started with the manufacture of four articles — a scrub, floor broom, stable broom and hearth or banister brush. With only 400 square feet of floor space and a staff of two, and no electric power, the Company commenced operations.

Today, with a staff of 100, the Company manufactures 1000 different types of brooms, brushes and mops for all industrial, commercial and household users.

In Some Cases, a Step Ahead

From 140 electric motors of $\frac{1}{8}$ h.p. to 25 h.p. and 31,800 square feet of floor space, this modern factory is producing high class brushware for the New Zealand market. The most modern automatic machinery is used and, in some instances, owing to the ingenuity of its staff, it has been a step ahead. Even today it has machines made by its staff, which are unobtainable elsewhere.

Can Design and Make Any New Brush

In meeting the present demand, the Company over the years has built up a valuable fund of knowledge, and to put this into practice has a team of expert foremen and staff, capable of designing and manufacturing any new type of brush required.

Materials are imported from practically every country in the world. Timber for brush stocks is available in New Zealand. Apart from the felling of the trees, and the cutting of the logs, the Company manufactures all its brush and broom backs in its own woodworking department and so carries out all operations from the raw timber to the finished article. In the manufacture of a household scrub for instance, there are 14 separate operations before it is ready for despatch. Work on other brushes varies according to type.

Three Basic Methods in Manufacture

There are three basic methods in brush manufacture.

The first is pitch setting in which the knots of fibre are set in previously bored holes in a brush back with hot pitch.

The second is the wire drawn method, which is used in brushes of lighter construction than is possible with the pitch setting process. It is secure in any work under conditions which pitch could not resist, e.g., where hot water or oil is present.

The third is the machine-stapled method, now dominant the world over in brush and broom construction. This is a modification of the wire drawn principle, from which it was developed in gradual stages. The first major stage towards this result was a machine which made staples from wire and, with them, fastened small tufts of fibres in holes already bored by hand in a brush back. The second stage in progress was with a machine which bores a back and also fills the relative hole in another bored back alongside. This process continues until the boring of one back and the filling of the other is completed, when the machine stops. The operator removes the filled brush, replaces it with a bored back, replaces the latter with a plain back and restarts the machine to repeat the process. The third, and latest stage in progress, is the continuous automatic method whereby the machine continues to turn out brushes as long as its magazines are full of brush backs, fibre and wire.

Overseas purchasing agents for the Company are: Bradley British Overseas Ltd., 3 Lombard Street, London, England. The New Zealand selling agents are Leon Schollum & Co., Auckland; Thos. Corson & Son Ltd., Gisborne; and Bendall & Thomson, Palmerston North.

It has always been the policy of the Otago Brush Co. Ltd. to produce brushware of the highest possible quality, and with modern equipment and expert know-how a high standard is being achieved today.

OTAGO BRUSH CO LTD

The youngest member of a famous family—

SLAZENGERS (NEW ZEALAND) LTD

3 Jackson Street, Petone

In the heyday of Queen Victoria's reign, not long after the triumphant success of the Great Exhibition had shown to the world the pre-eminence of Great Britain in commercial enterprise of every description, three manufacturing firms were founded, each of which in its principal products exemplified a characteristic preoccupation of the typical Englishman — his love of sport.

These three businesses, founded in the 70s and 80s of the last century by Mr. Albert Slazenger, Mr. William Sykes and Mr. Harry Gradidge, originally manufactured implements for the then increasingly popular pastimes of lawn tennis, football and cricket.

The forerunner of them all, however, had already flourished for over half a century — the house of Ayres. It was in 1810, five years before the Battle of Waterloo, that Edward Ayres established himself in Clerkenwell and started a cabinet working and wood turning business, at first for the production of equipment for indoor games only, but soon developing into a very much larger establishment for the manufacture of indoor and outdoor sports goods of every description.

Four Great Firms Merge Into One

These four firms, from well laid foundations in the Victorian era, through two Great Wars, have finally merged into one great organisation — SLAZENGERS.

The Slazenger sports goods organisation is today world-wide in scope. The parent company, Slazengers Limited, has two large factories in Yorkshire, England, one at Horbury and the other at Barnsley, and they are by far the biggest sporting goods plants in the Western Hemisphere. These factories cater for a growing demand from something like 159 different overseas markets, quite apart from meeting the heavy volume of U.K. orders.

In addition to the English factories, there are flourishing and continually expanding factories in Australia, Canada, France, India, South Africa and New Zealand.

Australian Craftsmen Started Production in N.Z.

Slazengers in New Zealand first commenced the manufacture of Tennis Frames in 1939 in modest premises, Adelaide Road, Wellington. The business was commenced as a branch of the Australian Company, Slazengers (Aust.) Pty. Ltd., Sydney. As the manufacture of Tennis, Badminton and Squash Frames is highly specialised and skilled work, and to ensure that the first frames produced in New Zealand were in accordance with the normal high standard of Slazenger productions, 12 skilled craftsmen — nine male and three female — were sent from the Sydney factory to commence production of the first Tennis Frames manufactured in New Zealand by Slazengers.

Notwithstanding that war had broken out in 1939, the demand for Slazenger Frames increased to such an extent that it necessitated larger premises, and, in 1940, a building of 10,000 feet was secured in Petone. After the cessation of hostilities, there was a pent-up demand for all types of sports equipment and the New Zealand Company commenced once again to manufacture sports goods on a full-time basis, late in 1945. Up to this period, only frames (tennis, badminton and squash) were being manufactured, but early in 1946 it was decided to commence the manufacture of golf clubs, and the first Slazenger golf club manufactured in New Zealand was produced in November, 1946.

In July, 1948, Slazengers (New Zealand) Limited was registered and the New Zealand Company became the youngest member of the Slazenger family. At this period, there was a considerable increase in the sale of Slazenger products and, in consequence of this, further larger premises were necessary: in 1952, a locality in Jackson Street, Petone, comprising a factory of 16,000 square feet, together with an acre of vacant land, was purchased. The transfer to the new premises took place early in 1953, and the headquarters of Slazengers (New Zealand) Limited is now situated at 3 Jackson Street, Petone.

A Commonwealth Flavour at Slazengers

From the original 12 Australians, the staff has grown to the present 45. Due to the highly skilled nature of the work, it has been necessary to "import" a number of skilled operators from the United Kingdom, especially for the golf section. It could be truly said that the Slazenger factory staff is a "League of Commonwealth", including Scotsmen, Yorkshiremen, Englishmen, Australians and New Zealanders, all giving of their best in producing Slazengers' fine products.

In the modern factory at Petone thousands of Tennis, Squash and Badminton Frames are produced, and of these the Slazenger "Matchpoint" and "Challenge" Tennis Frames are the most famous names. Also, many thousands of Golf Clubs are manufactured annually, under such well-known names as Ben Hogan, Bobby Locke, Norman Von Nida and Jean Donald. The Company also manufactures softball bats and has produced a considerable quantity of cricket bats.

Studying New Manufacturing Projects

Plans are now being formulated for an extension of further manufacturing projects and the Company's Factory Manager, Mr. R. W. Prien, is at present visiting Slazenger factories overseas studying up-to-date methods and examining processes for new manufacturing projects.

Whilst the Company is primarily a manufacturing one, it has, however, a large importing section, particularly in such lines as tennis balls, golf balls, cricket equipment, archery, and Leather goods, all manufactured by the parent company, Slazengers Limited, London. These are a few of the many lines imported.

A Famous Name on a Cricket Bat

In cricket particularly the Slazenger name is well-known and bats under the autograph of such famous cricket personalities as Sir Donald Bradman, Sir Leonard Hutton, Denis Compton, Colin Cowdrey, Tom Graveney, Cyril Washbrook, Jackie McGlew and Garfield Sobers are marketed freely.

On the importing side also, the Company holds the sole New Zealand selling rights for many important overseas manufacturers, a few of whom are:—

Harding Manufacturing Co. Ltd., Watford, England.	"Hamaco" Roller Skates
Unicorn Products Ltd., London.	"Unicorn" Darts
C. S. Hughes Gut Co., Sydney.	"Blue Circle" Tennis Gut
John Wilson Marsden Bros. and Co., Sheffield, England.	"Wilsons" Ice Skates
Milward's Fishing Tackle Ltd., Redditch, England.	Milward's Lines and Rods
Strachan Bros. Pty. Ltd., Melbourne.	"Courtmaster" Stringing Machines

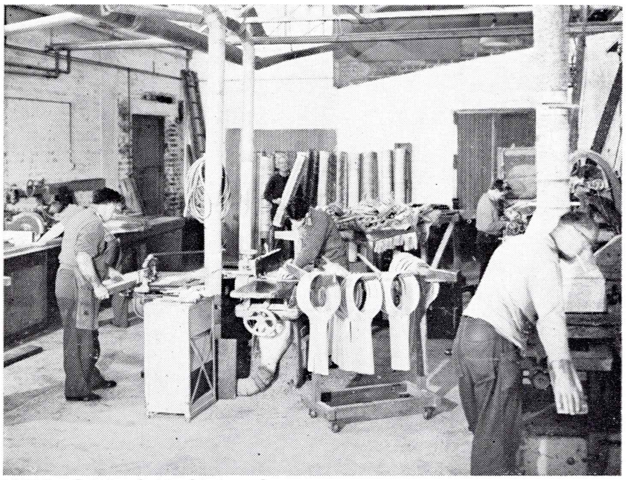
Slazengers (New Zealand) Limited has three Branches, at Queen Street, Auckland, Manchester Street, Christchurch, and at Napier.

Members of the Board of Directors are:—

Mr. David Blacklock, Sydney — Chairman
Mr. W. Gee-Taylor, Paraparaumu — Vice-Chairman
Mr. Michael McMaster, London
Mr. A. L. McLean, Wellington
Mr. N. G. Sturt, Auckland
Mr. L. T. Donovan, Wellington — Managing Director.
Mr. R. S. McKenzie is Secretary to the Company.

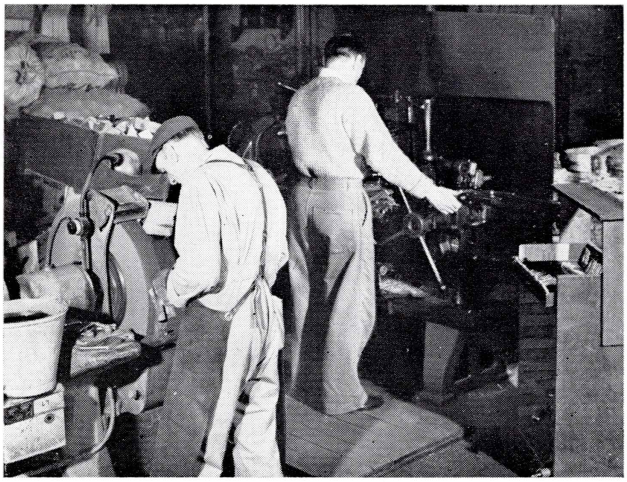
Slazengers' factory staff take pride in manufacturing their products. Infinite care is taken to ensure that only the best materials are used in producing the Company's fine products. The slogan of Slazengers is: "Quality of the product is paramount."

GENERAL VIEW OF GOLF CLUB manufacturing section in Slazengers' factory at Petone.

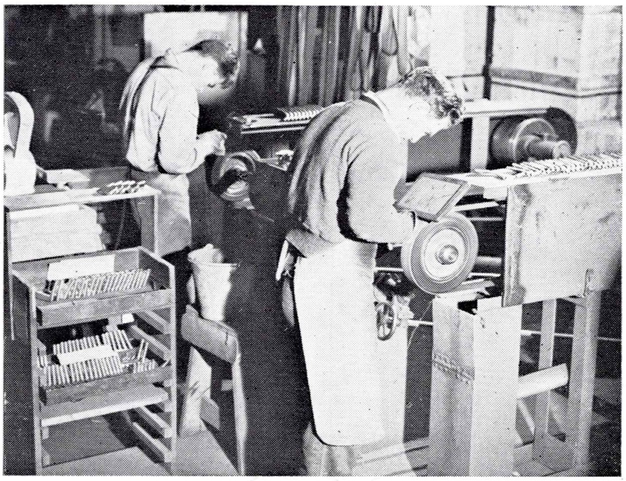


VIEW of Wood Machining department.

PORTION of Painting, Spraying and Finishing Section.



IRON HEAD Lathe, Boring and Grinding.



METAL Polishing and Profiling of Iron Heads. Note scales for fineweight tolerance.

Ink Manufacture is an Art as well as a Science

STEPHENS' INKS N.Z. LTD 301 Moray Place, Dunedin

The firm of Stephens' Inks N.Z. Ltd. had its origin in Wellington in a firm founded by W. J. Meek in 1886; four years later, this firm was transferred to Dunedin and set up business as ink manufacturers under the name of W. J. Meek Ltd. The original factory, a small two-storeyed building with an area of 1000 sq. ft., was situated in Great King Street.

Today, on the corner of Moray Place and Great King Street, adjacent to the original factory, which still stands and provides valuable storage space, is the present home of Stephens' Inks. Most of this building, with a total area of 8,800 sq. ft. on two floors, was erected in 1907, additions being made in 1917.

Modern Techniques and Plant take Less Space

The building programme was linked with the steadily increasing demand for Meek's Inks, and, later, Meek's Lion Gum. The advent of modern techniques and plant and their resultant saving in floor space mean today that in the present building there is still ample space for expansion as the demand increases with the growth of the country.

In 1931, W. J. Meek Ltd amalgamated with Henry C. Stephens Ltd of London, and, from January 1, 1932, the company assumed the name of Stephens' Inks N.Z. Ltd.

H. C. Stephens, Ink Manufacturers for over 125 years

Today, the New Zealand company has the benefit of the vast knowledge of Henry C. Stephens Ltd — knowledge acquired in the ink manufacturing field over a period of 125 years — as well as the resources and facilities for exchange of information with associated subsidiaries in Australia, South Africa, India, Spain, Chile, Argentine and Brazil.

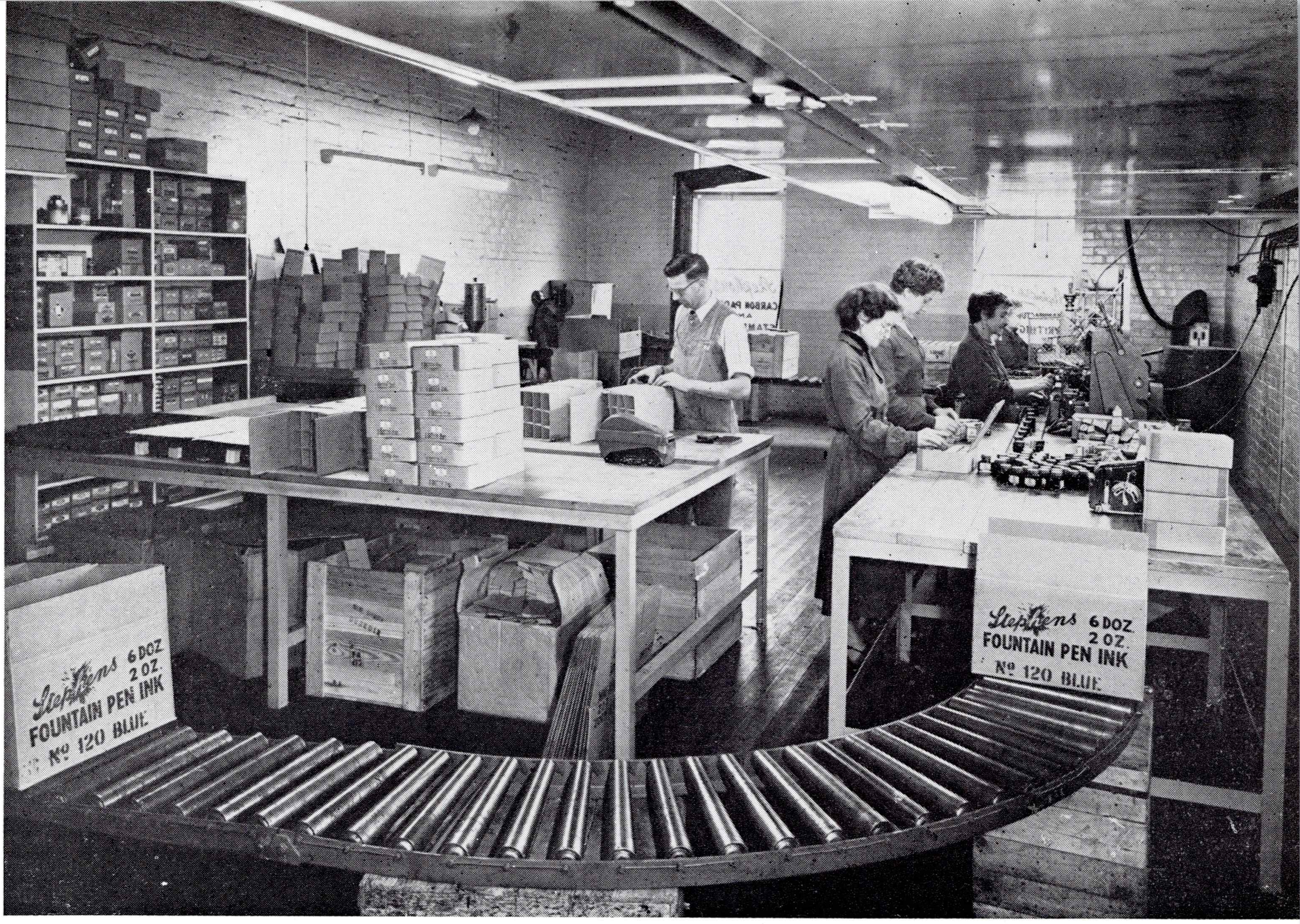
This Company is unique in New Zealand in that it is the only concern employed solely in the manufacture of ink — writing, and fountain pen inks must not be confused with the manufacture of printing inks, an entirely different procedure.

The business is under the management of J. W. Meek, a grandson of the founder. Thus the family association is retained in spite of the amalgamation with the parent company in London.

With few minor exceptions, the complete manufacture of all Stephens' products is carried out in Dunedin, using raw materials imported principally from Britain, but also from Asia Minor, and the Sudan.

INK AND GUM for DESPATCH THROUGHOUT NEW ZEALAND: A scene in the store at the factory in Dunedin. Cases at the back contain empty bottles from the glassworks.

Stephens INK
12 Doz. 1½oz
Nº 95 BLUE
Stephens FOUNTAIN PEN INK
6 DOZ 4 OZ
Nº 121 BLUE
GLASS WITH CARE


Stephens 6 DOZ. 2 OZ. FOUNTAIN PEN INK Nº 120 BLUE
Stephens 6 DOZ. 2 OZ. FOUNTAIN PEN INK Nº 120 BLUE

THE INK PRODUCTION LINE: At the far end of the room, an operator is filling the bottles, which are then capped, labelled and packed. The filling machine is obscured by the cap-tightening machine.

A Skilled and Exacting Task

The manufacture of ink is a skilled and exacting task, and it cannot be too clearly understood that there is as much art as science involved. The slavish following of a formula may result in an unstable product, through ignorance of the order and technique of procedure. In addition to the lengthy and complicated processes involved in ink making, considerable time has to be allowed for maturing and clarification.

The manufacturing processes used in Dunedin have been developed by Henry C. Stephens Ltd, and naturally these methods and formulae are jealously guarded.

Ink in a Range of 10 Colours

Perhaps the Company's best-known product is Stephens Radiant Blue Ink, but Stephens' ink is available in 10 colours, including Blue-Black, Permanent Blue, Scarlet, Green and Violet. These are packed in sizes ranging from 1½ozs. to 32ozs., and are produced on the production line method.

Well known, too, is Stephens Gum Mucilage, and Meek's Lion Gum with rubber spreaders, these also being produced on a production line similar to the one used for inks.

Stamp Pads, Endorsing Inks, Showcard Colours, Drawing Inks, Gripfix Paste, and Marking Ink are among the better known manufactures, but there are also the "special purpose" inks, such as Recorder Inks, Metal Stamp Inks, and Hektograph Inks.

During 1954-55, the portion of the factory used for production was completely redesigned and reorganised. The Company purchased the most modern plant available consistent with demand, and possessing the versatility to handle a multiplicity of sizes and types of inks, adhesives, etc. This plant is semi-automatic, and its output potential is more than twice that needed to meet New Zealand's requirements in 1958. When output has doubled, the next stage will be to install a fully-automatic production line.

Through the years, modernisation has resulted in economies in production, the benefits of which have been passed on to the consumer.

Of the Completed Article, most is N.Z.-made

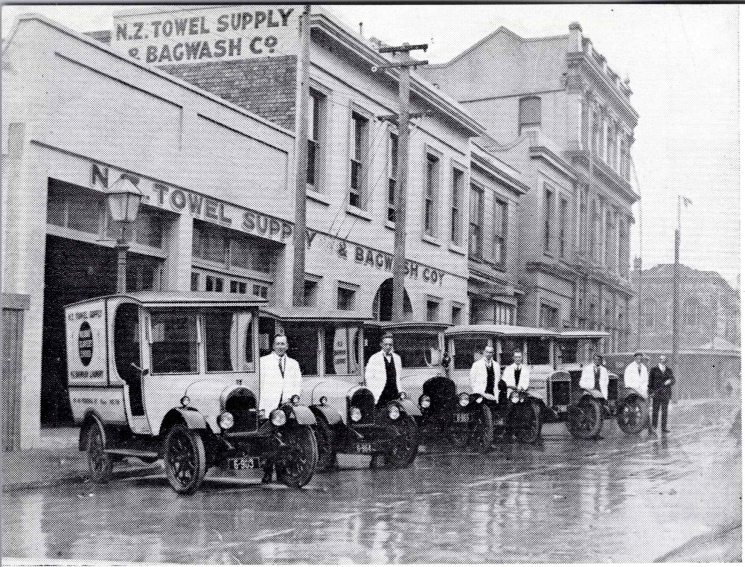
As mentioned earlier, some raw materials are imported from overseas, but the largest portion of the completed article comprises goods produced in New Zealand — glass bottles manufactured in Auckland or Christchurch, screw caps, and corrugated board packaging made from New Zealand Kraft paper. Stamp Pad tins are another example of the use made of component parts manufactured in New Zealand.

In the production of the completed article, there can be few manufacturing industries in New Zealand which depend so fully on other goods made in this country.

Stephens Inks and Adhesives, manufactured in Dunedin and available throughout New Zealand, are made to the same formulae, and are of the same high quality as any of Stephens' products available throughout the world. The whole of New Zealand's requirements are supplied from Dunedin, and distributed via wholesale stationers and wholesale merchants.

N.Z. TOWEL SUPPLY

54-66 Federal Street,
BRANCH OFFICES: Wellington,
Hamilton (The Waikato Laundry)

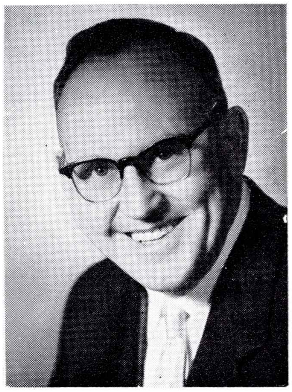


THE LINE-UP IN 1924 outside the premises in Federal Street. Joe Coulstock (second from left) is now Sales Manager. George W. Plowman, the founder of the firm is on the extreme right.

A delivery van backed into a loading bay beside eight others. "Is No. 10 in yet, Murray?" a mechanic asked the driver.

"Down the road somewhere," he answered.

"I'll stick this one in the garage then."



Managing-Director Jack Plowman

A white-coated attendant started unloading continuous roller towels into a bin on wheels, then armfuls of overalls, hand towels and dustcoats. It was just after midday. "I warned you it would be a rush," said the man at my elbow, J. H. Plowman, managing-director of N.Z. Towel Supply Ltd., "but it's even worse between four and five. Like a madhouse."

"Except that it's organized. This is streamlined. It looks a far cry from old Rosie's days," I replied.

"Rosie. She was a grand old mare, but how I hated catching her."

Jack Huffam Plowman (Huffam was his mother's maiden name) took a silent look back down the years . . . to 1948 and his father's retirement from the firm he had founded; to 1943, when Jack rejoined the business for keeps; to 1936, when he bought a drapery shop; to 1933-34 and a year in Melbourne; to Christmas 1930 at the Y.M. in Tottenham Court Road, London. And back further to his early training in America and, 10 years before that, to trying to catch Rosie at 5 a.m. on a wet winter's morning in Auckland.

The original company, The Clean Towel Supply, was the brainchild of Jack's father, George William Plowman, who was born in Onehunga 83 years years ago. He's still alive—"very much so," says Jack. "After brief schooling up to about 14, he went to Melbourne, working in hotels, and I think it was there that he first saw the possibilities in laundry services. He returned to N.Z., and, after a period in Christchurch, he married there in 1910, and brought his bride to Auckland where the couple started the towel supply business.

For Delivery—A Handcart

Jack Plowman was born in 1911, the eldest of eight children, five of them boys, yet despite the demands a growing family made on her time, his mother played a full part in the business. "I remember how she used to sew the towels, make them up, put tags on and repair them," Jack recalls. "She did the clerical work too, while Dad distributed and collected the towels with a handcart. The premises were at 31 High Street — one room, maybe two. The old building still stands. They had no laundry plant. My father contracted work out to the British Laundry Co. in Parnell. They're still operating. My father took them the soiled towels and picked up the fresh ones, then made up customers' orders and delivered them in the handcart."

The whole business centred around Queen, High, Fort and Shortland Streets, right in the city area. "I don't know if he wore a white coat; he probably did; our drivers always have," says Jack. "A lot of people still remember him in World War I days. He was quite a character. The first five years or so were pretty tough, but he graduated to a horse and cart, which he'd drive from Grey Lynn where we lived in Old Mill Road opposite what is now the Stadium.

"It was then a swamp with a couple of feet of water in it, surrounded by higher land where Dad grazed his horses. He had a pair of them before I was eight and I had to get up at 5 a.m. to find and catch them. There were no fences. Like as not I'd find them at the end of Garnet Road, or Sid. Dye would have them in his pound there, or they'd be standing in the swamp. How I hated it too!"

This is where Rosie comes into the picture. A quiet black mare, Jack rode her bareback with a halter to the stable behind the old home, leading the other horse. About 1917 a hired driver let Rosie slip to her knees and she had to be spelled. "The old man got a hired horse that I didn't like and that didn't like me," Jack reminisced. "One morning it bolted and gave me an unforgettable barebacked ride beneath the low branches of willows that used to border the stream which now flows through the zoo. Then it threw me."

A Straw Hat was a Tasty Tit-bit

This was one of the grimmer experiences of the eight-year-old boy. Life had its laughs too though. "One of Rosie's habits was to grab and eat women's straw hats as their owners passed on the footpath. You know the kind . . . with a bunch of fruit on top!" (Fashion seems to have gone full circle since then!)

By 1918 the firm had two drivers, but then came crisis: The British Laundry refused to do the work any longer. George Plowman knew nothing about the technical side of the laundry business and no other firm would handle his work. He and his wife talked things over. It was wartime. Things weren't easy. They had a growing family. Mrs. Plowman, however, encouraged her husband to take the plunge of a major decision and he bought a small Federal Street property from Jos. F. Keenan. One little piece of wall is still standing, 60 to 80 years old. Scraping together the elements of second-hand machinery and without any previous practical knowledge whatever, the indomitable pair "went into" the laundry business.

Federal Street then was no more than potholes joined together with a little metal. The gas lamps were few. "Dad kept one cart there at night and drove home to Grey Lynn in the other. He became a familiar sight, towing the second horse. Finally he graduated to motor vehicles with two Model T Fords, and very proud of them he was. I remember old Arthur (Sandy) Sandiford, one of our horse drivers, had an awful lot of trouble learning to handle a Model T. That'd be about 1920."

From then on, the firm's history is a story of steady growth. Three times it bought Federal Street land adjacent to the original premises, and it also acquired a Victoria Street frontage, making an L-shaped block. Constant expansion involved almost continuous building alterations. Extension, and new ideas to improve the services offered, meant the frequent addition of new machines. In 1931, the firm was turned into a limited company with a capital of £10,000.

A Co-operative Course at Cincinnati

Meantime, young Jack had been through Seddon Memorial Technical College and at 17 his father had sent him to the States to learn the laundry business through the University of Cincinnati's co-operative course in Ohio. "We have nothing quite like a co-operative course in New Zealand," said Jack. "The class is divided into two halves and each alternates be-

Laundered Annually

& LAUNDRY LIMITED

Auckland
Christchurch, Dunedin
Palmerston North (Premier Laundry)

tween theoretical and practical work. We'd probably call the University an industrial one here. It specializes in technical subjects, physics and so on, as well as offering formal and art courses. One month we'd work in a commercial laundry — 7 a.m. to 5 p.m. daily and five hours Saturday; a 50-hour week for 15 dollars. The following month we'd be examined on the work we'd done and would study theory. Classes were from 8.30 a.m. to 4.30 p.m. When you come out of it, you really know the laundry business."

From the States, Jack went to London and worked in the James Hayes Laundry in South Camberwell, owned by the famous catering firm of Lyons and doing all their hotel and restaurant work. That's how it happened that he was living at the Tottenham Court Road Y.M. on Christmas Day, 1930. Things "were a bit tough in those days. I got 45/- for a 50-hour week. We never knew anything else but 50 hours."

By 1932 he was back in Auckland, " . . . but I looked like a Yank and I spoke like one, after Ohio, and my father and I didn't get on. He claimed that what he called my new-fangled American ideas wouldn't work in New Zealand, so after about a year I went to Melbourne and got a £4 a week job. It was good pay for the depression. The Old Man was very disappointed in me and he told me so when he and my mother came over for a trip."

The result was that Jack returned to Auckland, but he lasted only about a year with his father. "It was the same thing over again." At the end of 1935, he married, left the firm " . . . and my wife and I started in the drapery business, of all things. For £350 I bought a shop in Dominion Road, Balmoral."

During World War II, Back to the Towel Co.

The depression had passed by 1936 and the Plowmans progressed. Jack started manufacturing knitwear bands and facings for cardigans and had a staff of five by the end of 1943. World War II was in full swing by then and the Towel Supply Co. had manpower problems. Worried by his troubles, George Plowman at 68 had more than he could cope with, so Jack sold his shop and knitting business and once more joined his Dad. The latter finally retired in 1948, "but he still visits the works occasionally and takes a keen interest despite his 83 years." His wife retired with him. What with raising eight children and working very actively in the business, "I don't think she'd had a day off in 37 years. She is still alive and well," said Jack.

We were sitting in what is to be his new office, a small, unpretentious room. Dressed in charcoal grey Jack Plowman reflects the tidiness of his surroundings and I wasn't surprised to find this attitude permeating the streamlined works.

Jack's brother, Keith Plowman, is production manager. The firm has many long service men and women. Two men have been with the Company for over 33 years, Joe Coulstock and Roy Brown who are now Sales Manager and Washroom Manager respectively, whilst two others, Bert Elder, Service Engineer, and Mrs. G. Blackmore, the stockroom controller have each seen 28 years' service with the Company. The Auckland staff numbers about 90. The firm also operates the N.Z. Towel Supply service in Wellington, Christchurch, Dunedin, Hamilton (through the Waikato Laundry), and in Palmerston North (through the Premier Laundry). Jack showed me over the 24,000 sq. ft. of the Auckland works, more than 25 times the size of the original 27 x 39 ft. building! "We've grown in all directions on two floors," he said, "and still haven't enough room."

A 55 h.p. oil-fired boiler provides all the steam required for heating water, drying and ironing, delivering it at a pressure of 100 lb. per square inch and gulping nine tons of fuel oil a week to do so. A scarlet tanker disgorged a three-ton load to underground tanks while we watched. Steam heated to 180 deg., the water for washing is delivered by a 1500-gallon water heater at city pressure, having first passed through a water softener and filter to improve its quality. "We plan everything to make the quality of the service unequalled," said Jack.

N.Z. TOWEL SUPPLY AND LAUNDRY LTD.
ARMSTRONG & SPRINGHALL

PART OF THE 1958 FLEET OF 25 DELIVERY VANS. In today's efficient organisation, parcels are packed in the van for delivery so that the last one in is the first one out.

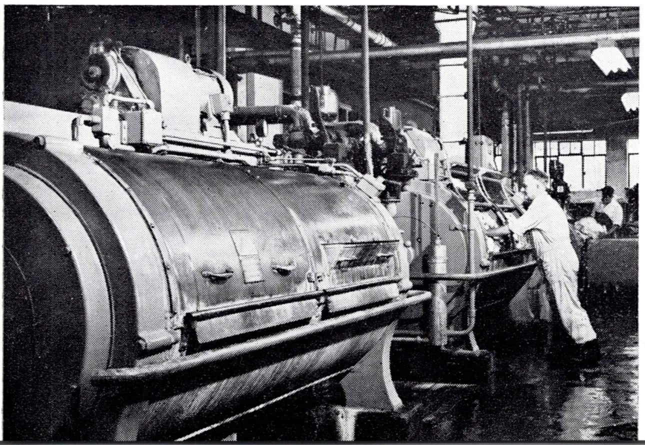
He made a second look-see-learn trip to the States in 1957 and his "new-fangled American ideas", as well as British know-how, have produced a mass-production flow basis that is a gem of efficiency. Fourteen vans maintain a continuous delivery and pick-up service. Up to nine can load or unload simultaneously. Let's take a look.

Garments to the Right, Towels to the Left

Each driver has packed his soiled load in pre-determined order. From the back of his van come armfuls of continuous roller towels, then hand towels, overalls, smocks and dustcoats, into wheeled bins. Laundering is divided into two sections, each subdivided to handle whites and coloureds separately. Garments go to the left, towels to the right; the whites from offices and professional rooms to be washed separately to avoid heavy industrial grease and dirt. Garments arrive tied in bundles, docketed and individually marked with the Towel Supply name, the name of the wearer (who always gets his own, fitted garment) the date of issue, size, and the code name allotted to his employer. "We do no household work," said Jack, "but we do handle a client's own overalls, and garments related to his business or profession—doctors' and hairdressers', and so on. Here's the docket on this bundle, see: Cyril picked up 18 soiled garments and delivered 18 clean ones and got the customer's signature. That blue tick shows the driver's count has been checked and the red tick shows the docket has been through the office and accounting department."

Jack introduced continuous towels in 50-yard rolls with mechanical dispensers in 1954. I watched an unrolling machine unwind such a towel and automatically lap it back and forth across a metal clothes-horse. The laps are tied top and bottom and thus it goes into a washing machine with a 300 lb. dry weight capacity. A battery of six of these will wash just under a ton an hour! Automatic controls actuate hot and cold water, adjust the depth of liquid in the machine, and time each operation. All the washman has to do is add soap, soda, blue

BATTERY OF AUTOMATIC WASHING MACHINES which deliver nearly a ton of wash an hour to the hydro (see next page).



and starch at the right times. The wash is held in a brass perforated inner container in a stainless steel shell 3/16in. thick. They are British machines with every possible safety device.

Gauges show water temperature and levels, and periodically the machines automatically reverse to stop the contents roping up. Eccentric cams take care of automatic dumping and refilling for the rinsing cycle—five rinses with progressively higher water levels.

Damp-dry Towels like Cheese Segments

The wet towels, 700 lb. of them, are next packed into four quadrants of the centrifugal hydro extractor, like a giant milking-shed separator, swinging free from the top. A 32 h.p. electric motor starts to turn it—its balance must be just right — and slowly it picks up speed. In 10 minutes it swings out 400 lb. of water and automatic timing cuts out the motor. When he had loaded the hydro, all the operator did was to press a button and turn to the next job. The machine did the rest. The 48in. diameter drum was turning at 1200 r.p.m., hence the need for balanced load. Push-button control subsequently operated an overhead winch to lift the lid and sides and the operator lifted out the damp-dry towels like cheese segments (they're called cheeses) from the four quadrants. The hydro is balanced to take the full capacity of each washing machine in turn, with very little manhandling.

A lift whisks the wheeled bin of clean towels to the second floor, where a shaker-tumbler (like a concrete mixer) shakes out most of the wrinkles before each continuous towel is untied. Towels are fed 10 at a time through an 8-roll steam ironer, the spring-padded rollers squeezing the cloth as it moves over the ironing plate. It is what is called a 3-pass machine, the towels moving on a return apron conveyor to the winder. This ingenious automaton not only rewinds each towel in seconds, but checks it for yardage so that no towel goes out short length — a protection for the client. A suction fan in an enormous hood above the ironing machine eliminates the heat and leaves working conditions pleasant.

Streamlined Efficiency

Meantime coloured towels have been processed separately, as have ordinary white towels and tea-towels. From the drier, girls fold them, while others are handling washed overalls and coats, examining each for repairs. Five electric sewing machines are whirring. No garment goes back to its wearer unrepaired. If too badly damaged, it is replaced by a new garment from stock. Garments are individually pressed, and different coloured dockets follow each job through the works so that all garments for each client automatically come together again for packing. Girls make up each driver's road book and pack his baskets with the parcels in the same order as he will need them for delivery. All he does is to put the whole thing in his van, knowing that the top parcel will be his first call and the bottom one his last of that round.

"The only other section," said Jack, "is for starch jobs — clients' own garments — which get VIP treatment. Here it is." From there he led me to the cafeteria and so on to the stock room, the garage and the repair depot, where continuous towel cabinets and mechanical dispensers were being overhauled. "We supply cabinets free," he explained. "All the customer pays for is the supply of towel roll. We've installed them all over N.Z. and each gets a six-monthly inspection. We bring them back here for repair and repainting. The public looks after them extremely well. We even have them on the waterfront. When I suggested putting them there I was laughed at. 'They'll rip 'em down and smash 'em up,' they said, but I decided to give it a try anyway. As it turned out the wharfies treated them with care. Give the people something decent and they'll look after it all right."

"How many towels do you handle a week?" I asked. "Around 52,000," he replied, "but they're only one side of it. Industrial rental garments are equally popular."

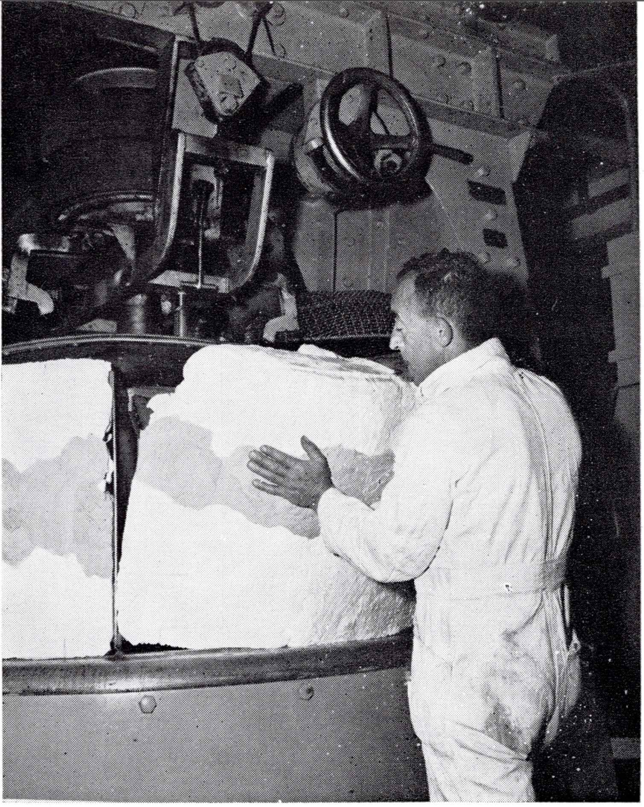
The firm employs a garage mechanic, an engineer, a boilerman and a cleaner all on a full-time basis, and operates its own garage and repair shop, not included in the 24,000 sq. ft. of floor space which Jack finds "not enough."

Garments or Towels for 100,000 Men and Women

Recognizing opportunity and converting it into an efficient service to industry and the professions — that possibly sums up what George and Jack Plowman have devoted 48 years to perfecting. Today, over 100,000 men and women wear the garments or use the towels the firm provides, the garments with the individual's own name on them. They know they are sterilized, bactericidal, and that no one else has worn them. N.Z. Towel Supply launders millions of articles annually; more than any other laundry of any type in the Dominion. The firm buys enormous quantities of industrial garments and towels direct from the manufacturers, maintaining large stocks with overalls, dustcoats, smocks and so on in all the necessary sizes. Its clients, on the other hand, don't buy a single garment. The firm supplies all they need, on an extremely economical basis — no investment of their own, no laundry bills, no repair or replacement costs. For employees the service spells comfort, health protection and convenience. Doctors and dentists, offices and factories, clubs and transport terminals, hospitals, schools, Government departments, hairdressers and beauty parlours — the list of people using the service is a long one. There isn't a trade or profession that cannot benefit from it.

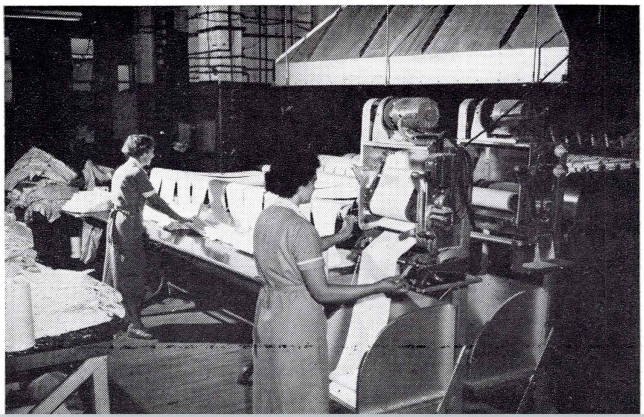
I hadn't looked at it like that until Jack dropped a casual comment or two. The firm's fleet of 25 vans, on the road all day and every day, are a far cry from Mum's Monday morning washtub . . . a far cry too, from Old Rosie and grandma's hat!

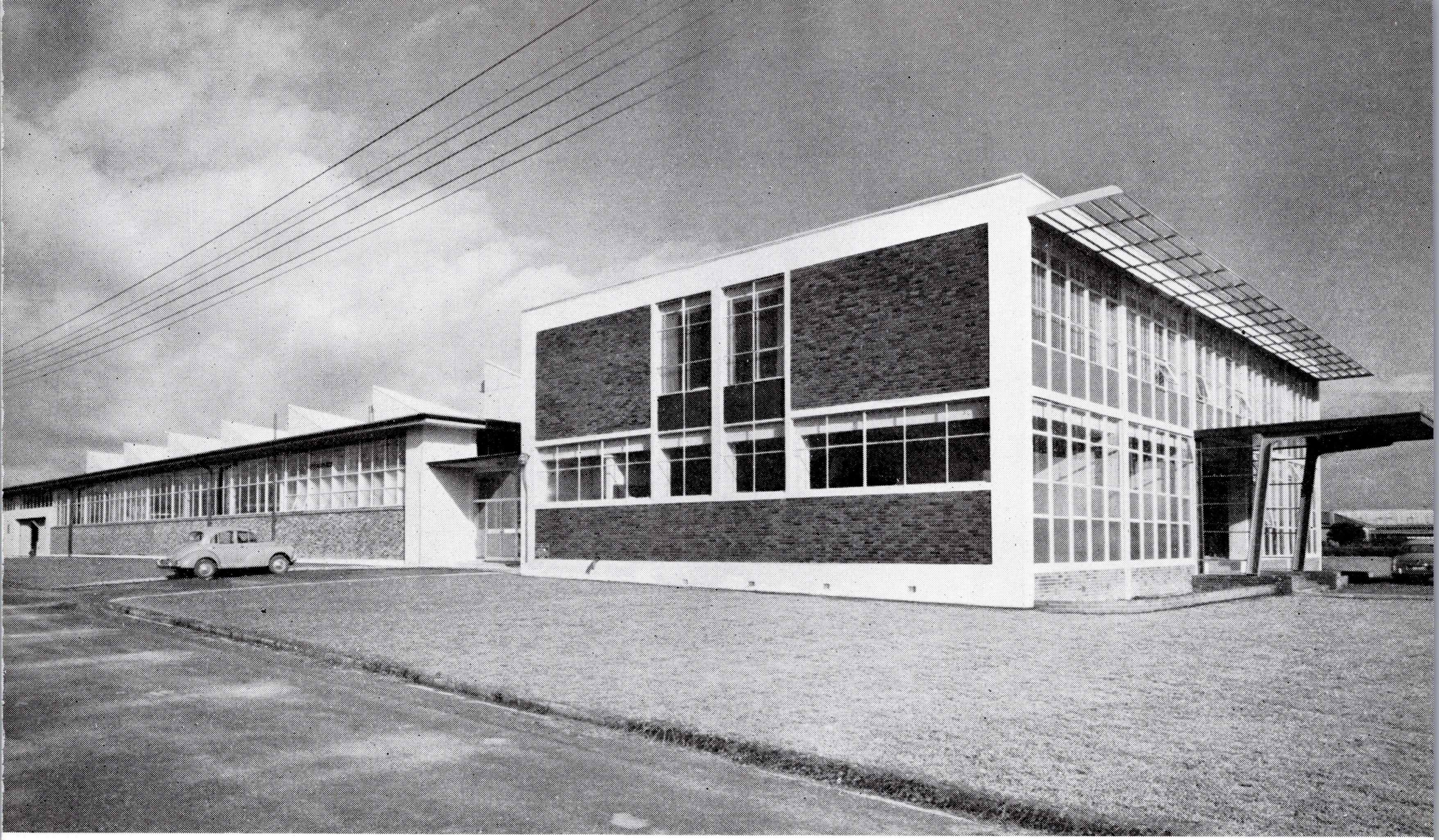
—MARTIN COLLINS



THE HYDRO EXTRACTOR: In 10 minutes, it swings out 400 lb. of water. Here the operator lifts out damp-dry towels called "cheeses" because of their shape.

FROM THE HYDRO TO THE IRONING MACHINE: Towels are fed through an 8-roll steam ironer at a speed of 50 feet per minute.





A New Zealand Subsidiary of an old-established English Company

E S & A ROBINSON (NEW ZEALAND) LTD.

Totara Avenue, New Lynn, Auckland

The Parent Company of E. S. & A. Robinson (N.Z.) Ltd.—E. S. & A. Robinson Ltd. of Bristol—has been making paper bags for over 100 years. In this it still excels but subsequent modern developments have dwarfed this activity.

The strength of Robinsons today seems to owe much to a number of early events which established sound tradition. It is commonplace nowadays that to sell packaging, one must know the products of the customer. The training in the grocery trade that Elisha Smith Robinson had contributed to this quick success—he knew what the customer wanted.

As an addition to paper and paper bags, Elisha added a small printing plant and, since then, the Robinson Group has been among the pioneers in developing and applying advanced printing techniques. These techniques have been employed throughout the Group in all spheres of activity—flexible packaging on paper, films, foils and folding cartons.

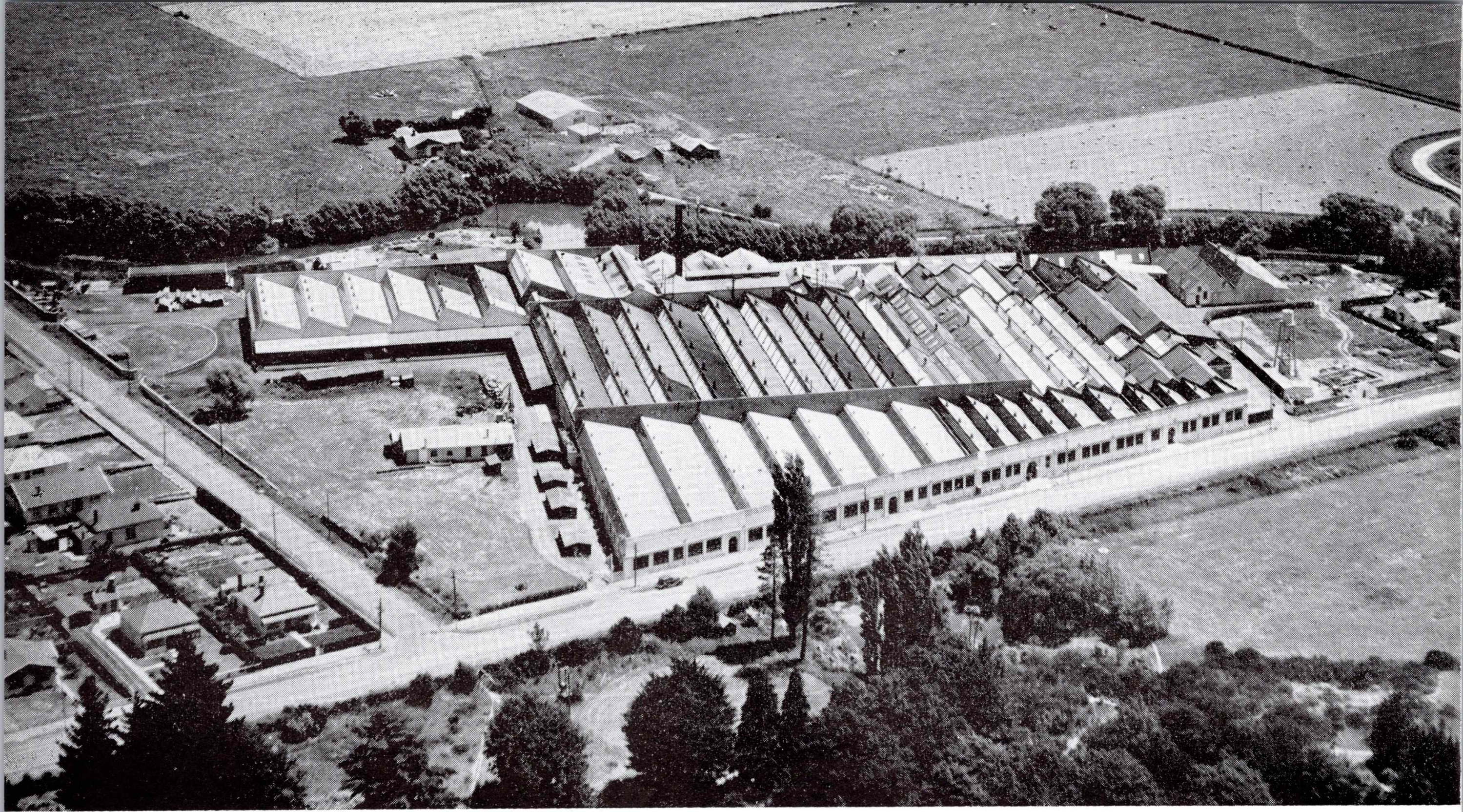
In the field of protective packaging, Robinsons have had considerable advantages over their contemporaries, and this long experience has stood them in good stead against a competitive field. A modern packaging organisation should be capable of designing the protective package to meet the particular requirements of the many products and customers. Technical advances in this field of packaging opened up a wide variety of new forms of packing materials, especially to provide a more effective barrier to moisture. Such packaging techniques take the form of waxing, coating, laminating, and impregnating heat-sealing lacquers, etc., using paper, board, film, foil, tissues, singly or in combination.

It was within this group-activity that the old-established New Zealand company of Abel Dykes Ltd. was drawn when Robinsons of Bristol acquired the New Zealand company in February, 1952.

The ready and wide acceptance of self-service in New Zealand's retail economy, especially so with foodstuffs, gives the packaging engineer and packaging designer a wide scope to develop and use their talents. This New Zealand company is generously equipped with these talents, having brought from Bristol personnel with overseas technical and designing experience.

Today, a modern packaging, carton and printing plant is established in New Lynn, and the New Zealand company shares in the technical developments going on overseas. A big advantage is access to the comprehensive research facilities available in Bristol—these facilities and files are available to the Company's New Zealand customers who are only now 5-7 days (by airmail) away from this all-important aspect of modern packaging.

Packaging in New Zealand has still far to go to reach the excellence of the overseas development, and Robinsons feel that they will contribute in no small degree to this acceleration.



AN AERIAL VIEW OF THE KAIAPOI WOOLLEN MILLS, 12 miles from Christchurch.

A policy of continuous development keeps Kaiapoi in the forefront of industry in N.Z.

THE KAIAPOI WOOLLEN MANUFACTURING COMPANY LIMITED

30-32 Manchester Street, Christchurch

Branches: Auckland, Wellington, Napier, Dunedin, Invercargill

One of the earliest industries to be successfully established in New Zealand was that of woollen manufacturing and a Company closely associated with the foundation and development of this important industry is the Kaiapoi Woollen Manufacturing Company Limited. Now in its 81st year of existence, this Company has had a long and eventful history since the time the first woollen cloth made in the province of Canterbury was woven in its small factory on the banks of the River Cam, at Kaiapoi.

It was natural that an industry utilising locally produced wool should commend itself to the early settlers of North Canterbury, but it is interesting to note that the original mill at Kaiapoi was established to process not wool, but flax. In 1873, a Company named the Canterbury Flax Spinning, Weaving and Fibre Company Ltd. was formed, with a nominal capital of £20,000, to take over and develop a flax mill which had been operated by private owners since 1866. This Company purchased the premises and plant with the object of dressing and processing the flax fibre and making it into sacks, scrim and packs. When it was found that the purchase of machinery for this purpose would involve an outlay equivalent to half the capital, the directors and shareholders decided to abandon the treatment of flax and act on a clause in the Company's Memorandum of Association which authorised its activities to be transferred to the manufacture of woollen goods if conditions were favourable. Thus it was decided to undertake the manufacture of blankets and flannels, and machinery for this purpose was ordered in 1874.

Production commenced in 1875 and the first blankets made in the mill were on sale in Christchurch in July of that year. This must be considered an important date in the history of Canterbury. Although the Company showed a considerable loss on its first year of working, the directors felt that the undertaking promised well and decided that they must increase production to make operations pay. Accordingly, it was resolved to double the plant and additional looms were ordered from England.

The Company was also awarded a bonus of £2,000 given by the Canterbury Provincial Government for the promotion of woollen manufacturing.

Although several calls were made on shareholders, the directors found it difficult to secure sufficient finance to carry out their plans, and went to the shareholders with the proposal to increase capital and to move the factory to a site near Heathcote, on the Christchurch-Lyttelton railway line. Strong opposition to this plan was received from Kaiapoi shareholders and, although the proposals were carried, none of the increased capital was subscribed.

Original Company wound up

After a short time, the directors were left with no option but to wind up the Company and dispose of its assets, including the additional plant ordered from England. At an auction sale held in July, 1877, a North Canterbury gentleman and member of the Legislative Council, the Hon. J. T. Peacock, purchased the whole undertaking for £7,000. Mr. Peacock carried on the mill for one year but, by July, 1878, 14 citizens of Kaiapoi had been found who were willing and able to put up £1,000 each, and the Kaiapoi Woollen Manufacturing Company Limited was incorporated on the 7th August, 1878, with a nominal capital of £15,000 divided into 15 shares of £1,000 each.

Woollen manufacturing at the Kaiapoi Mill was continued on an increasing scale and the first financial statement of the Company showed a profit of £778 for the five months ended 31st December, 1878. A newspaper description of an inspection of the mill made early in 1879 records that several qualities of blankets and flannels were already being produced, as well as tweeds and plaiding. Additional machinery was purchased and extensions were made to the mill. In 1880, the capital of the Company was increased to £100,000, divided into 4,000 shares of £25 each. Of the increased capital, about £40,000 was offered for subscription to existing shareholders and to the public. The new capital was applied towards enlarging the mill premises and plant, establishing a warehouse and clothing factory in Christchurch, and paying off a mortgage on the mill property.

In 1882, the balance of the unallotted capital was offered for subscription, and in the accompanying prospectus, it was stated that the Company now employed 240 hands at the mill and 185 at the clothing factory—a total of 425. It was estimated that additional labour would shortly be required, amounting to a further 140 hands. Wool to the value of £36,000 had been purchased for that year's operations and for the same period 2,600 tons of coal would be used.

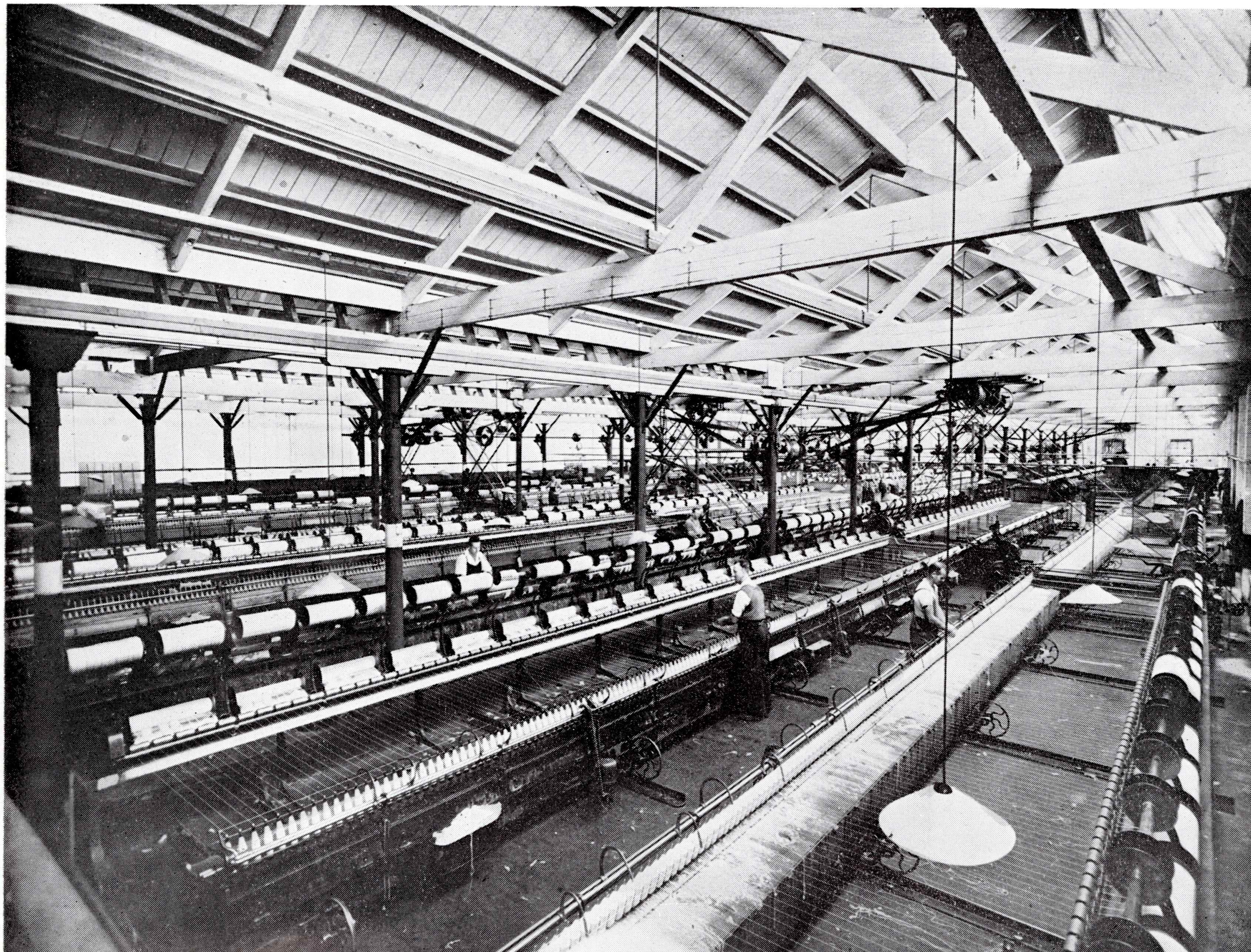
1885: a wide range of woollen goods and clothing

By 1885, the Company's capital of £100,000 had been fully subscribed and paid up. The nominal capital was then further increased to £200,000 and the registered office of the Company changed from Kaiapoi to Christchurch.

By this time, the Company was producing a wide range of woollen goods and manufactured clothing, and these goods were distributed throughout New Zealand and even exported to Australia. However, the next few years were difficult ones for the young enterprise. An acute depression in trade was experienced throughout the Colony, bringing about a sharp contraction in the demand for woollen goods and forcing down prices. The Company's stocks of manufactured goods rose to a dangerous level and the mill was put on to short time. The rate of dividend which, for the previous few years had been maintained at 10%, was, in 1887, reduced to 7%, and the following year to 5%. In one of the Directors' Reports to shareholders published during this period, there appears the passage: "Your directors also think that they are justified in calling shareholders' attention to the fact that in their opinion more woollen mills are being erected in New Zealand than can profitably be employed with the present population".

In 1890, a loss was experienced for the first time, contributed to, no doubt, by a strike which occurred in the mill due to resentment by the workers at a further reduction in working hours. However, conditions improved

THE MACHINES OF THE SPINNING DEPARTMENT where wool in the form of a loose thread is drawn out more finely and receives sufficient twist to strengthen it and convert it into a workable thread.



steadily during the 1890s and, in 1897 and 1898, the Kaiapoi Mill was practically re-built and much new machinery was installed.

Further development took place during the early years of the present century, both at Kaiapoi and in the clothing factories in Christchurch. In 1907, a new site was acquired in Christchurch for the erection of a warehouse and factory premises. The following year, a serious fire destroyed much of the old Christchurch premises and the construction of the new warehouse and factory block was pressed forward with urgency. When these new buildings were occupied in 1909 they were considered second to none in the Southern Hemisphere. During the Great War of 1914-1918, the Company's mills and factories made a noteworthy contribution towards the New Zealand war effort. Substantial quantities of military clothing were produced, as well as blankets, flannels and other woollen goods required by the Armed Forces.

Hosiery and knitted goods made at Radley

In 1919, a further major development took place with the erection of a new mill at Radley, Christchurch, for the manufacture of hosiery and knitted goods which had previously been carried out on a smaller scale at the Kaiapoi Mill. By this time also, the Company had established branch warehouses in all the main centres of the country for the purpose of ensuring wider distribution of its manufactured products and providing the best possible service for its clients. In most cases, new buildings were erected to house these branches—an example of the progressive policy which has been followed by the Company since its inception.

In 1920, the nominal capital of the Company was increased to £600,000 and the issued capital to £450,000.

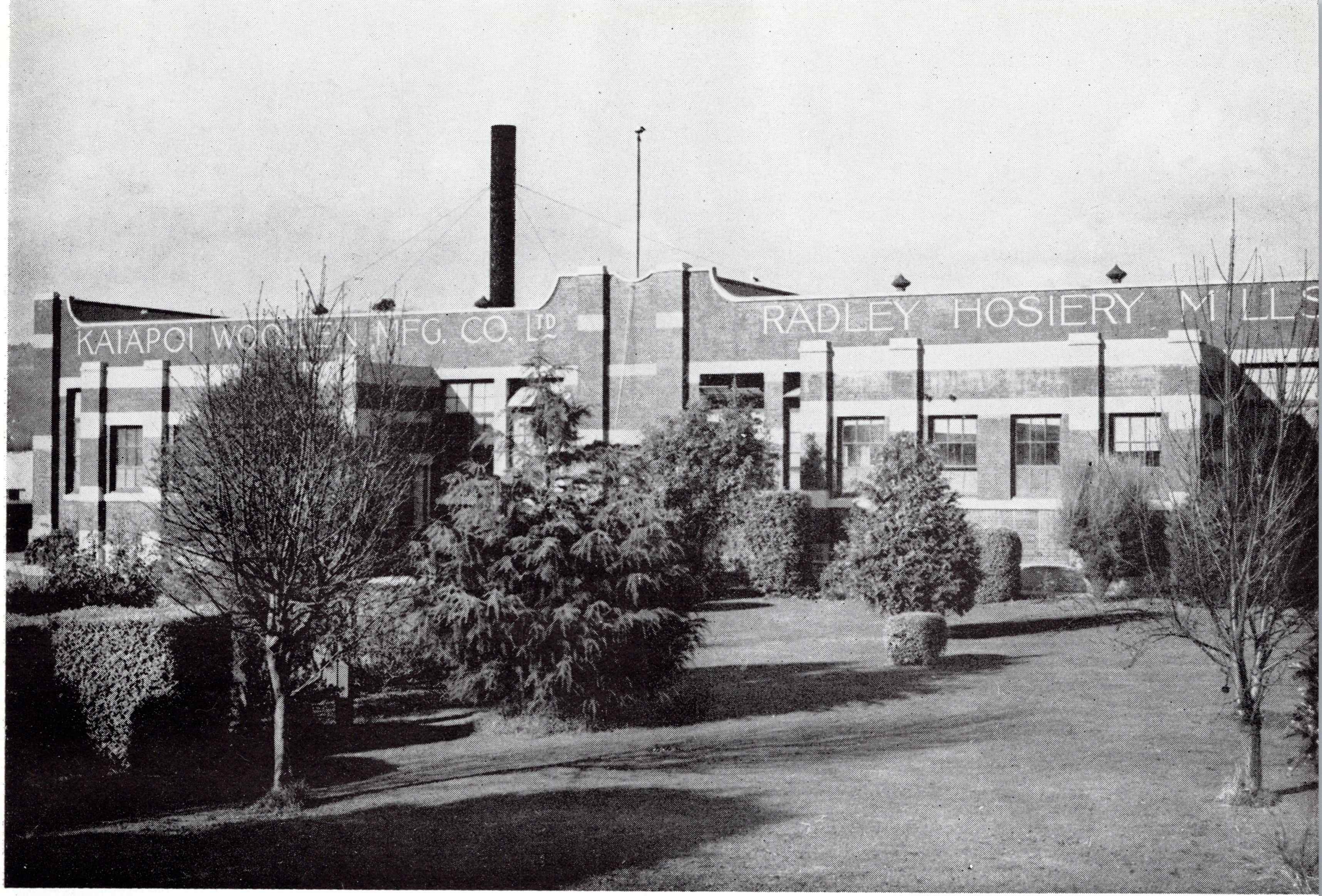
The period of boom and inflation which had been experienced immediately after the Great War was then followed by a world-wide slump in commodity values and the Company, in common with most other major New Zealand concerns, sustained heavy losses in the value of its stocks, particularly imported lines. A series of difficult and unprofitable years resulted.

However, in 1926 another noteworthy step forward was taken. This took the form of an extension to the mill at Kaiapoi, and the establishment there of a modern worsted combing and spinning plant for the production of all types of worsted yarns.

The War effort — clothing for the Forces

During the years immediately prior to the last war, continuous development took place at both the Kaiapoi Woollen Mill and Radley Hosiery Mill, with the introduction of much additional modern machinery, as well as the orderly replacement of older plant. Development also took place in the Company's clothing factories, with the result that the outbreak of war found all the Company's manufacturing units in the peak of condition and more than equal to the great demands which were to be made upon them in the next vital years. A record of the Company's

A PORTION OF THE WORSTED SPINNING DEPARTMENT AT KAIAPOI.
After combing and drawing, the wool is spun into a fine, smooth yarn.



THE RADLEY HOSIERY MILLS, CHRISTCHURCH, in their garden setting.

manufacturing effort during the second world war would fill many pages. Suffice it to say here that the following are the total quantities of the principal products supplied to the Armed Forces:—

From Kaiapoi Mill:

Battledress and Uniform Cloth	899,200	yards
Flannel Shirting	490,800	yards
Blankets	130,184	pairs

From Radley Hosiery Mill:

Socks and Stockings	793,788	pairs
Knitted Vests	265,668	garments
Knitted Shorts	229,776	garments
Jerseys	104,280	garments
Cardigans	3,966	garments

From the Company's Clothing Factories:

Army Battledress	55,623	suits
Naval Coats	8,298	garments
Other Uniforms for the Forces	8,731	suits

Besides these, numerous other lines of goods were manufactured in smaller quantities, but all played their part in equipping our forces to the highest standard for the grim struggle.

Since the war, further development has taken place and extensions have been made to all the Company's mills and factories, thus enabling it to maintain the very important place which it holds in the textile manufacturing industry of New Zealand. In its manufacturing units and sales departments, the Company provides employment for nearly 800 people. Over 4,000 bales of New Zealand-grown wool are used annually, besides quantities of other fibres and a great variety of manufacturing materials, both locally produced and imported.

Reference has already been made to the Company's principal products. The following list is not complete, but it includes most of the types of goods in the Company's range. Kaiapoi Mill produces Blankets, Rugs, Flannels and Woollen and Worsted Piecegoods of all descriptions, hand knitting yarn and machine knitting yarn used in the Compan's own Hosiery Mill. All types of knitted outerwear, cardigans, pullovers and jumpers in wool and other fibres, underwear, both woollen and cotton, for men, women and children, swimwear, as well as men's and boys' socks and stockings comprise the output of the Company's Radley Hosiery Mill. In the Company's clothing factories are manufactured men's and boys' overcoats, suits, sports coats and trousers, school caps and uniform caps, men's and boys' shirts and pyjamas, women's coats and skirts, girls' school uniforms and men's and women's dressing gowns.

Processing of wool in the Kaiapoi factory

A tour round the Company's Kaiapoi Mill to observe the wool being processed through the numerous stages of manufacture is an event of absorbing interest to both young and old. Commencing at the large wool stores containing several thousand bales of wool stacked many tiers high, the visitor is then taken to the wool sorting department, where he is shown fleeces of the wool being taken from the bales and sorted into a number of qualities and styles, according to the purpose for which it is suited. This must be done by hand and the judgment and skill which is required can only be gained through long experience. Uniformity of the finished product is to a great extent dependent upon the skill of the wool sorter.

After being sorted and classified in bins, the wool is passed through a scouring machine for the purpose of removing its natural grease, together with dirt and other impurities carried in the fleece. A series of moving rakes gently propel the wool through long tanks containing a scouring solution of warm water and detergents, and finally through a rinsing tank. During the scouring process, the wool loses between 20% and 50% of its weight in the form of the fats and impurities which are removed. After scouring, the wool is dried and then taken to the blending department where each batch is thoroughly mixed to ensure uniformity of shade and quality. Carding is the next process, and in this department the wool is brushed by a series of revolving rollers until all forms of tufts and locks have disappeared and a complete mixing of fibres is obtained. Accurate quantities are automatically fed into the machine and the material, as it approaches the delivery end, gradually develops into a thin film of fibres. At this stage, the wool first takes the form of a loose thread by the rubbing of a number of the fibres together. In the spinning department, this is drawn out more finely and receives sufficient twist to strengthen it and to convert it into a workable thread.

The combing technique for worsteds

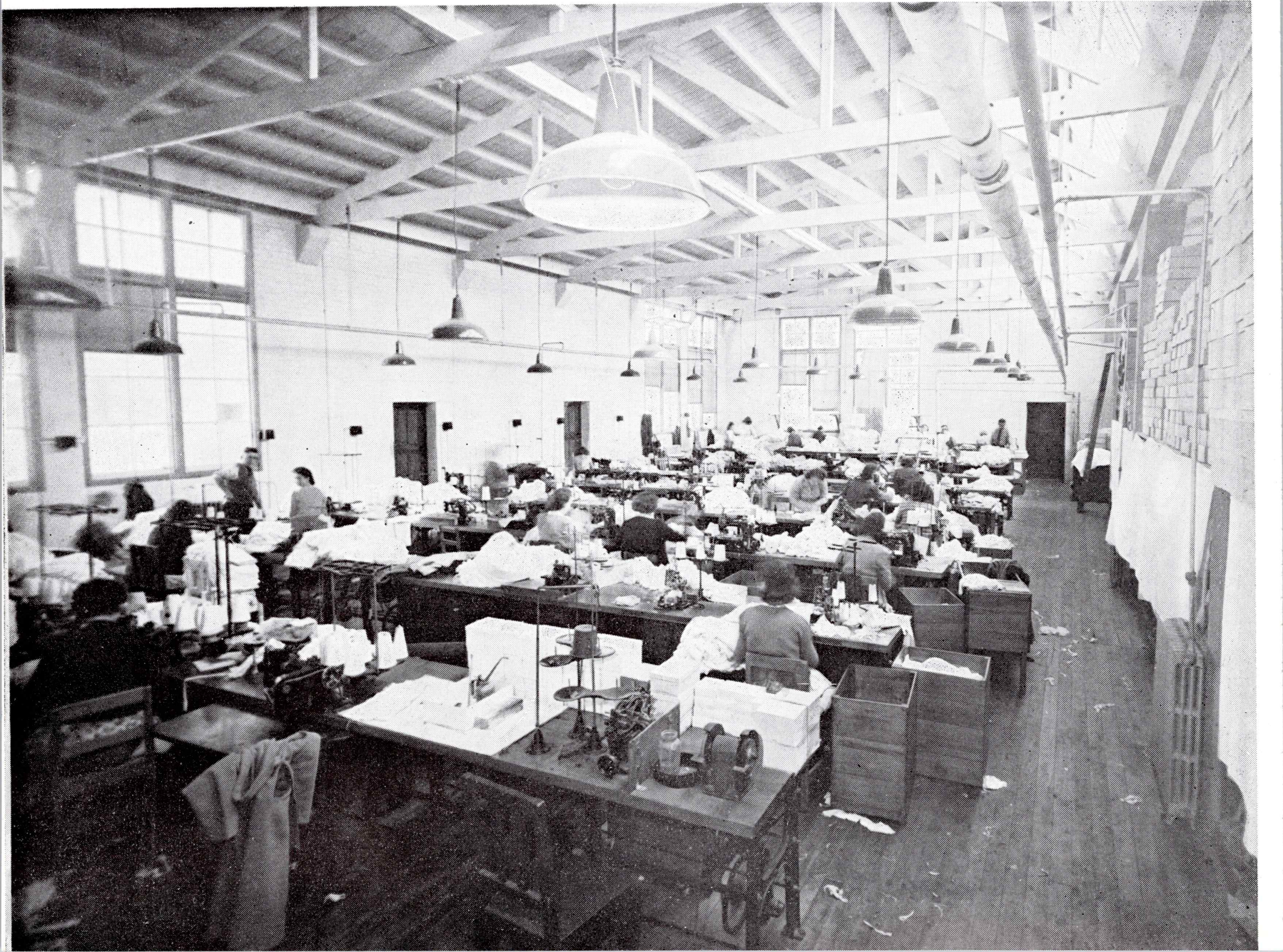
The foregoing is the method of producing yarn by the woollen system, this yarn being used for the manufacture of blankets, flannels, tweeds and similar goods. The visitor is then shown the worsted processing system, by which the longer fibred wool is treated. The essential feature of this system is the combing process, which arranges all the longer fibres in a parallel formation known as a top and removes the shorter fibres which are known as noils. Noils are a valuable by-product, and may be used in blends for spinning yarns under the woollen system. The combing process is carried out in a machine which draws the long fibres through rows of closely set pins. After being combed, these long fibres comprising the top are delivered from the machine in the form of a rope or ribbon.

A series of drawing out processes then reduces this top in thickness and weight to the stage where it may be spun into a fine, smooth yarn. The twisting process follows and is the doubling of two or more threads together for strength or colour effect, according to design, and, from this stage onwards, the succeeding operations are substantially the same, for either woollen or worsted materials.

The wool is now in the form of yarn and the next process is known as warping, where the threads which will run longitudinally through the cloth are arranged to give the correct pattern or design and are then wound on substantial rollers known as beams, which are placed in the looms for weaving. In the weaving operation the warp threads are separated according to a definite sequence, and between these warp threads are inserted the weft threads known as picks, which are carried across the loom by means of a fast-moving wooden shuttle. A definite number of picks per inch are inserted according to the weight and type of cloth being produced.

The dyeing of the wool may be carried out either immediately following its initial scouring or in the form of top, yarn or woven piece, the stage at which this process takes place being governed by the type of wool and the class of goods being manufactured. After having been woven, all pieces of cloth are carefully examined in the

THE UNDERWEAR FINISHING DEPARTMENT at the Radley Hosiery Mills. A variety of specialised sewing machines are employed.



1880: THE KAIAPOI WOOLLEN MILLS. An increase in capital in this year was used in enlarging the mill premises and plant, establishing a clothing factory in Christchurch, and in paying off a mortgage.

burling and mending department. Loose ends and knots are removed and any flaws or imperfections repaired. The finishing operations as carried out vary to some extent according to the type of cloth and the class of finish required, but, essentially, all cloths are first passed through a wet finishing process, by which they receive a thorough scouring and washing, and if they require to be further softened up and felted they are subjected to what is known as a milling process, by which the wool fibres under the action of heat and moisture are felted together, reducing the fabric in length and width and making it firm and bulky. The cloth is then dried and receives further treatment known as dry finishing. This may take the form of raising or brushing, and brings up the short fibres to the surface so as to give the cloth a warm, cosy handle, as in the case of blankets. On the other hand, cloths, such as worsteds and fine tweeds, pass through a cropping machine, the purpose of which is to remove the surface fibre and leave a clean smooth finish. All cloths are then pressed, measured and rolled ready for despatch.

High grade knitwear and clothing

The processes involved in the manufacture of knitted goods as carried out in the Company's Radley Hosiery Mills are also well worthy of inspection. Large stocks of yarn which have been spun at the Company's Kaiapoi Woollen Mills are carried in a bulk yarn store. Almost every conceivable shade is represented in both fine and coarse counts of yarn. As it is required for manufacture, the yarn is drawn from the bulk yarn store and is wound on to special bobbins which are then transferred to the knitting machines. In the knitting department the visitor is shown numerous batteries of machines which produce fabrics in a great variety of weights, patterns and textures. Fabrics are knitted in either flat or tubular form and, in the latter case, as many as 30 rows of knitting may be formed by every revolution of the machine. The bulk of the machines which manufacture fabric for knitted outerwear are of the modern automatic type, which change their pattern and stitch without attention from the operator and, by so doing, produce lengths of fabric, including waist bands and cuffs, which may then be used for the body portions and sleeves respectively of the finished garment. Also operating in the knitting department are the half hose machines, which manufacture men's and boys' socks and stockings in endless sequence. After being knitted, the fabric, in either continuous rolls or a series of garment lengths, passes through a number of finishing processes, which may include scouring, dyeing, pressing and shrink proofing, according to the purpose for which it is required.

In the cutting department the fabric is laid up on long tables and is cut either by machine or by hand into the component parts of the garments to be made. These are then assembled in batches and moved into the making-up departments, where they pass through a number of machining operations for which a variety of specialised sewing machines are employed. After being made up, the garments are pressed and hand finished and then submitted to a thorough examination so as to ensure that the highest standards of workmanship and quality are maintained. Finally, the goods are packed in readiness for despatch.

Socks and stockings pass through a number of interesting wet and dry finishing operations before they are pressed on special shapes, examined, paired up and packed.

In the Company's clothing factories the superior cloths made at the Kaiapoi Woollen Mill are manufactured into many types of high grade clothing by skilled workers using the best modern machinery. All the products of Kaiapoi's mills and factories are marketed through the Company's own sales organisation, with headquarters at Christchurch and branches and representatives throughout the Dominion.

The Company's policy of continuous development, which has been responsible for its growth and progress since the days of its inception, will be continued in the future. In the mills and factories constant improvement and re-organisation is carried out. Every year sees new machines being introduced to replace those which have become worn or obsolete. From time to time, major extensions are made to accommodate plant required for carrying out a new process or for manufacturing a new product. The Company's technical staff keep themselves closely acquainted with the latest trends and developments in the textile industry in other parts of the world. Skilled staff is also recruited overseas and brought to this country to occupy key positions in the Company's production units.

Whatever the future may hold, the directors of the Kaiapoi Woollen Manufacturing Company Limited are confident that the position of prominence which the Company now occupies in New Zealand industry will be fully maintained, and that the Company will continue to make its full contribution towards the further expansion of manufacturing in New Zealand with which its progress up to date has been so closely linked.

Parisian
NECKWEAR
COMPANY
LIMITED

THE PARISIAN factory and offices in Lorne Street, Auckland.

Pride in its products and achievements

PARISIAN NECKWEAR COMPANY LTD.

78-80 Lorne Street, Auckland

Established in 1920, the Company became the pioneers of the tie industry in New Zealand. Today, it is the Dominion's largest tie manufacturer, with head office in Auckland, and branches at Wellington and Christchurch, as well as a London office.

The organisation owes much of its phenomenal growth to a vigorous and successful programme based on top quality production. From its initial specialised line and the experience thus gained, it has extended its activities into the manufacture of belts, braces and sanitary towels.

In conjunction with its London office, the Company has been able to meet relentless competition through the exchange of ideas and so keep abreast of modern developments and reflect overseas trends of fashion.

With its own sales promoting organisation which services directly the whole of the retail trade within the Dominion, the Company has been able to market "New Zealand's Finest Neckwear", as well as its other lines, to distinct advantage.

The Company has made a valuable contribution to the commercial life of the country and has been a considerable unit in the manufacturing industry, producing the well-known "Parisian" Ties, Scarves and Bows. Loop-Ties, made to exact specifications of cloth and design, are produced under licence.

Shipments of silk, the basic material used, are regularly received from leading United Kingdom, Continental and U.S.A. mills. On arrival, the material is handled by a skilled staff numbering 100, several of whom are specialists in the trade. With this background, the Company's manufacturing policy of specialising in better grade products has had the result of earning for itself a reputation for high quality of design, durability and workmanship.

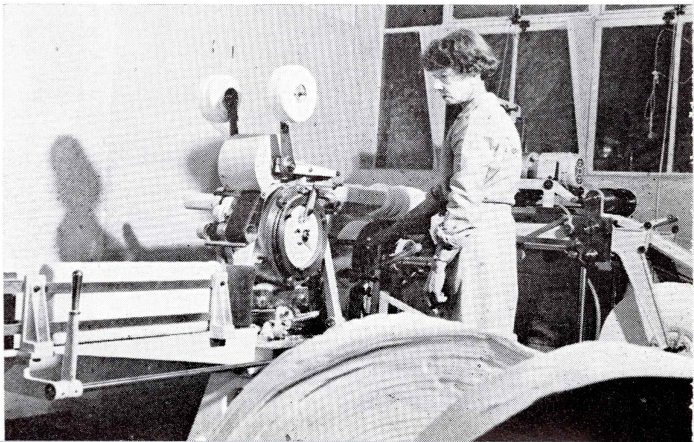
A comprehensive range of Parisian braces and belts for men and boys, armbands, garters and suspenders are manufactured in another department of this organisation.

Some 25 years ago, the Company pioneered the sanitary towel industry in this country. "Santex" and the new "Santex Nolyn" are made to an exclusive formula and developed on the latest high speed machinery under the most stringent hygienic conditions possible.

Directors: J. A. Gentles (Chairman), A. J. Weir (Manager), A. Crompton, R. N. Reed.

(Below) KNITTING THE FABRIC: Each unit uses 6 - 14 spools as required.
(Below Right) MODERN, HYGIENIC pad making machine, fully automatic in operation.

Photos: Sparrow Industrial Pictures



From jewellers' ring boxes to containers for refrigerators, the selection is endless

UNITED EMPIRE BOX COMPANY LIMITED

Cnr Tory and Vivian Streets, Wellington
Factories: Auckland, Hamilton, Hastings, Shannon,
Wellington, Christchurch, Invercargill

Three out of every five containers made in New Zealand are manufactured by United Empire Box Company Limited. With 10 factories strategically situated from Auckland to Invercargill, the Company is able to cater for local industries with a service which is adapted to suit their particular demands.

Formed by the recent merger of the Empire Group of Companies with United Box Company Limited, this new company offers a wide range of cardboard packaging products to the country at a time when the pre-packaging of goods for display in self-service stores is becoming more and more popular.

A merger of two Companies

The United Box Company Limited was started by Mr. R. M. Scott in Adelaide Road, Wellington, in 1945. Later, a factory was established at Shannon to cater for the Taranaki, Hawke's Bay and Wellington areas. As business in the South Island expanded, a factory was built in Christchurch and, with the increase in the packaged meat and fish trades, a further branch was opened in Invercargill. To service the needs of Messrs. J. Wattie Canneries Limited in the greatly expanding canned and frozen foods business, a factory was established in Hastings. More recently, a subsidiary company, United Box Co. (Auckland) Limited was formed to fabricate the country's full requirements of butter boxes.

In August, 1955, United Box Company Limited was re-registered as a public company and new capital was introduced to finance the expansion of this progressive business.

The Empire group consisted of three manufacturing companies founded by Mr. William Higgins in 1905. The Empire Printing & Box Manufacturing Company Limited was established in Adelaide Road, Wellington, for the manufacture of cardboard cartons and containers. As business expanded, a further company, The Empire Cardboard Box Company Limited, was opened in Auckland. In the 1930s, separate carton and container factories were built in both Wellington and Auckland to cater for the requirements of New Zealand's rapidly growing secondary industries. More recently, the Rosewood Cardboard Box Company Limited of Hamilton was acquired as a wholly-owned subsidiary of the Auckland company, to provide for increasing business in the Waikato district.

With the easing of building restrictions in 1954, the Wellington company purchased some seven acres of land in Randwick Road, Lower Hutt, and erected a modern factory with office accommodation to house the two existing factories. In this new factory, production flow on the straight line principle was introduced, greatly simplifying processing and handling of materials.

THE LOWER HUTT FACTORY OF UNITED EMPIRE, showing the office and cafeteria building in front. Note the wide frontage of the building, which is ideally suited for carton production.

The basis of the amalgamation was an evaluation of the two organisations based on their respective earning capacity and shareholders' funds. The name of United Box Company Limited was changed to United Empire Box Company Limited, and the capital of the company was increased to £500,000. The increase in capital was allotted to the shareholders of the Empire group in exchange for the shares and properties previously held by them.

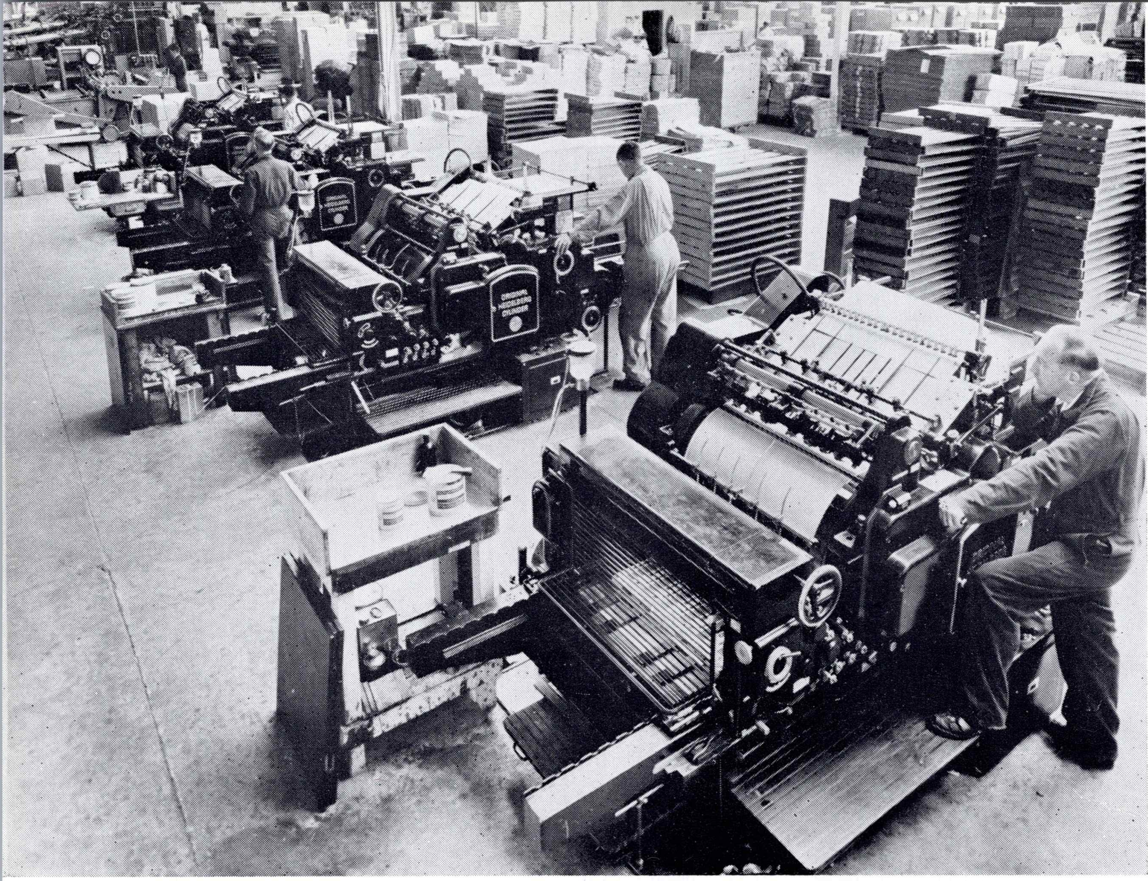
Ten specialist factories

The story of the progress of the company is perhaps best told by a review of the 10 factories which it operates. In the main, these units specialise in their particular field of packaging and have thus been able to reduce processing costs to a minimum. From the geographical point of view they are all strategically situated close to the customers' factories. Goodwill has been built up between salesman and buyer and a service can be rendered which would be more difficult to attain if negotiations were conducted from a distance.

There are three factories in Auckland, the first to be established being in Newmarket. This factory manufactures cartons and boxes for the Auckland and Waikato areas, specialising in ice cream and other food cartons, window display cartons, and boxes for the textile and footwear trades.

The container factory for the Auckland area is situated in Te Papapa. This factory has already been enlarged on three occasions and there is land available for further extensions. Large orders are executed for the export meat trade. Several million containers are manufactured each year from corrugated board, the popularity of which keeps the plant operating to full capacity.

At Panmure, a factory has been opened solely for the purpose of supplying the New Zealand Dairy Board with its full requirements of butter boxes. Some six to seven million boxes are produced each year and railed to dairy factories throughout the country. Modern methods of handling raw materials have been



A ROW OF FOUR HEIDELBERG MACHINES in the letterpress printing section of the Lower Hutt factory. These versatile machines are used for a large range of carton work.

introduced to cope with the great tonnage of cardboard involved in this contract.

The Hamilton factory has been in operation for the past two years, manufacturing containers for dairy companies and other clients in the fast-growing Waikato and Bay of Plenty areas.

The opening of a factory at Hastings to service the quickly expanding food processing and wine growing industries has proved a successful venture. Double shifts are worked at the height of the season and the plant is kept at full capacity the year round to package the produce of this highly fertile province.

The factory at Shannon was the scene of a disastrous fire in September, 1957, causing damage valued at more than £100,000. Nevertheless, production was under way again within six days of the fire and a modern factory has since been erected on the same site. Shannon supplies containers for the Taranaki and Wellington areas, a large part of its production being cheese containers for the dairying industry.

Large factory in Lower Hutt

The main factory for the Wellington area is in Randwick Road, Lower Hutt, and has an area of 92,000 square feet all on one floor. Ample space has been provided for office accommodation, staff cafeteria, engineers' and carpenters' workshops, etc. A large art and plate-making department processes zinc plates for the offset printing section, this method being used for the bulk of carton printing. A feature of the letterpress printing section is a bank of four Heidelberg presses. A board conditioning room, in which the moisture content of cardboard can be controlled before and during processing, has been installed. Both cartons and containers are manufactured in this factory, but its construction is ideally suited for carton work, which forms the bulk of its production. A raw material store is situated at one end where cardboard is held prior to processing. The plant layout has been so arranged that the material flows in a straight line from this store through the various processing departments, until it is packed for despatch to all parts of New Zealand at the other end of the factory.

In Petone a factory manufacturing a large range of boxes for the clothing and footwear trades is satisfying a strong demand for this type of product.

The Christchurch factory has been operating for some years and is now well established, serving the Canterbury, West Coast and Marlborough areas. Containers are manufactured for numerous general merchandise lines, as well as the export meat and frozen food industries.

Newest member of the Group

The newest addition to the factories of United Empire is that recently opened in Invercargill, with a floor area nearly three times that of the previous factory and with ample room for expansion. Business continues to grow in the progressive province of Southland, where the export meat and fish trades have made great strides in recent years.

Raw materials from the vast forests

The success of our cardboard packaging industry is a direct result of New Zealand's greatest asset — its climate.

Cardboard, produced from the trees of our vast forests in the Bay of Plenty, is used to package the produce of our farm lands — the butter, cheese and meat for export and home consumption, fresh and frozen fish, fruit and vegetables — as well as the thousands of lines produced by our fast growing secondary industries.

Cardboard is produced from woodpulp, i.e., logs reduced to a pulp either by mechanical grinding or chemical digestors. The pulp is treated with bonding chemicals and bleached to give the desired colour. It is then fed through a series of steam heated rollers, some of which caliper the board to the required thickness; others determine the surface finish of the cardboard. In this way, various types, colours and qualities of cardboard up to a thickness of approximately 45/1000ths of an inch are produced. Heavier qualities are produced by pasting or laminating several layers of cardboard in various combinations to give the desired strength. The board comes from the machines in a continuous sheet and is wound into reels. It is allowed to mature for several weeks before being cut to the sheet size ordered by the customer. Corrugated board is a type which has a wide variety of uses in the manufacture of containers. It is made by laminating several layers of paper, each alternate layer being corrugated. The corrugated layer gives added strength to the board. Some qualities have five layers of paper of which two are corrugated, producing a board which has excellent protective characteristics.

FOUR MACHINES of the carton cutting and creasing section. The machines crease and segregate the individual cartons from the sheet of cardboard.

Products and Processes — No limit to the range

There is no limit to the range of cardboard packing materials that can be produced by United Empire. From jewellers' ring boxes to containers to hold electric stoves and refrigerators, from plain cards for packing shirts to modern high quality record covers, the selection is endless.

For production purposes, this range is divided into three main categories — cartons, containers and boxes. All types are produced from a plain sheet of cardboard, which is normally ordered from the mill in a size which will give the customer the most economical cut and have a minimum of wastage.

Cartons, and how they are made

In carton work a number of samples are normally produced for the customer by the Company's artists. When the customer has selected the sample to be produced, the artists make large scale drawings for each colour that is to be printed on the carton. These drawings are photographed and reduced to the required size, thus eliminating any imperfections in the original artwork. If the job is to be done on the letterpress machines, metal blocks for each colour are ordered. If it is to be done by the offset process, then zinc plates are made. An offset plate has a sensitised surface and impressions are made on it in the same way that a contact photograph is made. The number of impressions made on the plate depends on the number of cartons that are to be produced from a single sheet of cardboard. This number is decided by the size of the order, the size of the carton, and the machines available to do the job.

The largest printing machines used will print a sheet of cardboard up to a size of 36in. by 48in. As an example, 84 tens cigarette packets can be printed on a sheet of this size in one operation. Machines are available to print up to four colours in one pass through the machine. A dry powder is sprayed onto each sheet after it is printed to assist in drying the inks and to prevent the ink forming an impression on the underneath side of the next sheet on top. The printed sheets come from the machines in stacks between five and six feet high, and are normally held in a drying room before being passed on to the next department. The next operation is known as cutting and creasing. In this section the folding creases are placed in the cartons and the various cartons in the sheet are segregated. A cutting forme made of steel knives set in 7/10ths inch plywood is used. The forme is flat and measures the same size as the sheet of cardboard to be cut. The knives have various edges: a sharp knife will cut the cardboard whereas a knife with a rounded edge creases the sheet. Other knives produce a perforated line.

A female die is mounted on the cylinder of the machine, and as each sheet passes on to the cutting forme the cylinder is rolled over the sheet. As the sheets come from the machine the waste cardboard is stripped away, leaving the segregated cartons in stacks. These stacks are then fed into a glueing machine, which folds and seals the carton by applying a thin layer of glue to the glue flap. Glueing machines operate at very high speeds and the cartons are counted electronically as they pass through. As the cartons come from this machine they are packed for despatch.

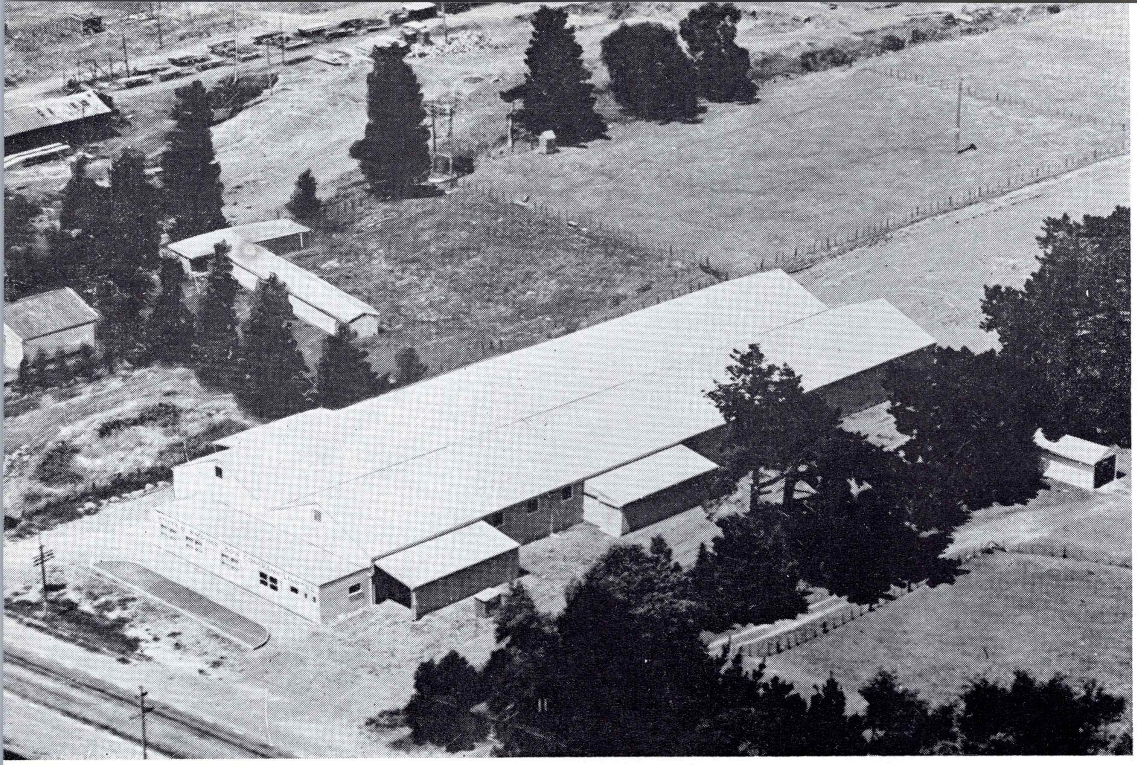
Two versatile new machines

Cartons are produced in all sizes and in great variety by machines which are used for particular purposes. Among the more recent additions to the machines of United Empire is a "Bobst" Autovariable printing and diecutting press. The "Bobst" will print in up to four colours, cut and crease the sheet and strip the waste cardboard, all in one operation. After coming from the "Bobst", the cartons need only be passed through the glueing machine prior to packing and despatch.

Another new machine is the Hi Gloss waxer, which applies a thin layer of liquid wax to both sides of the carton. The cartons then pass through a cold water bath which gives them a highly glossed surface. This type of carton is presently being supplied to the frozen food and ice cream trades. A further method of giving cartons that highly polished effect is done on the clarosheening machine. This machine laminates a sheet of cellulose acetate film to the printed surface of a carton, producing the glossy effect commonly seen on modern record covers.

A popular form of packaging is the carton with a cut-out cellophane window. This carton is used extensively by marketers of fresh fruits and other foods as the contents can readily be seen by the buyer.

The packing of eggs in cartons is now almost universal throughout New Zealand, and has caused a substantial increase in egg sales. The cartons are produced on standard lines, but an intricate cutting forme is used to produce the walls which



AN AERIAL VIEW OF THE FACTORY IN OMAHU ROAD, HASTINGS, in which containers are manufactured, for the food processing and wine growing industries of Hawke's Bay.

protect the individual eggs and give the carton an ingenious locking device.

A carton fast gaining in popularity is that produced on the "Expresso" machine. A standard carton is fed into the machine, which packs the goods into the carton and seals each end with polythene coated paper prior to folding the end flaps. As the carton has been waxed during manufacture, the Expresso machine produces a completely airtight pack ideally suitable for a great variety of foods.

Containers in all sizes

Containers are made from either solid fibre or corrugated board. They are produced in all sizes: the largest commonly made in New Zealand is for the packing of refrigerators. An outsize container recently manufactured overseas was 21ft. long and used for packing aluminium mouldings.

There are four main operations in the manufacture of containers. They consist of the printing, the cutting out of the slots forming the top and bottom flaps, the insertion of the long creases which run around the container and the short creases running from top to bottom, and the closing of the container by either stitching or taping. Certain machines do a combination of these operations in one pass of the sheet of cardboard through the machine.

The printing of containers is done by either metal or rubber stereos mounted on the cylinder of the press. Most modern machines print in two colours, insert one set of creases in the sheet and cut out the slots, all in the one operation. The creases are made by two wheels, one fitting into the other, and depending on whether the sheet of cardboard passes through the printing machine the long or short way, that set of creases is inserted. Some machines do produce both sets of creases in the one operation, but if this cannot be done the other set is normally inserted prior to printing. The slots in the container are cut out with special slotting wheels. Four slots are made on either side of the sheet, one set being at the end and forming the stitching flap.

The final operation is the folding and stitching of the ends of the sheet with a series of wire staples. Automatic machines are used for this operation, producing a container in the flat ready for delivery to the customer. Another form of closing the container is a strong cloth tape 1½in. in width, in place of the wire staples.

A variety of containers are produced for special purposes. A well known one is the "Saranac" container, which incorporates wooden struts at the sides or ends, giving great strength for stacking purposes and excellent protection for the goods packed. It is commonly used for packing fragile articles or for fresh fruits, etc.

Another form of protection for goods of an unusual shape — bottles, glassware, etc. — is the range of layers, gap fillers, divisions, corrugated pads, etc., which are supplied to suit individual requirements.

Boxes for special purposes

The box and lid type of packaging is largely used in the confectionery, textile and footwear trades. Where printed paper covers are used, a most attractive pack can be produced. Printed boxes are supplied to numerous manufacturers whose products suit this type of packaging. The plain sheets of cardboard are guillotined to size, creased to the measurements of the base of the box, the corners slotted and formed by either stitching, taping or glueing. Where the boxes are to be covered, they are then placed on a machine which automatically glues the paper wrapper, covers the box and neatly folds the ends into the inside. The lids are made in exactly the same manner and are fitted to the boxes prior to despatch.

A type of box currently very popular is that featuring what is known as the "crash" bottom. Less costly to produce for the reason that it can be made on automatic machines, this box has the advantage that it can be packed for despatch in the flat as against the normal type of box which must be delivered fully set up. As the box is formed, the bottom folds and locks in position, giving a rigid box equal in all respects to the normal set up box.

Management and Staff

The present Board of Directors of the Company is:—Sir William Perry, Kt. (Chairman), Mr. J. N. C. Doig (Managing Director), Mr. G. D. Lishman (Asst. Managing Director), Mr. R. M. Scott (Director of Production), Mr. W. B. Higgins, Mr. E. L. Bartleet, Mr. G. D. Henderson and Mr. J. Wattie.

A staff of 450 persons is employed throughout New Zealand. Long service awards, in the form of gold watches or other suitable presentations, are made to employees on the completion of 15, 25 and 35 years of service. Several employees have served for over 40 years with the company.

A good product deserves good packaging

The main purpose in all types of packaging is to give adequate protection to the article being packed. In this art the salesmen of United Empire are thoroughly trained and it is their duty to advise the customer on the best way to pack his product. They know the quality of cardboard which should be used and whether protective liners or fillers are necessary. It is unwise to endeavour to reduce packaging costs by specifying a cheaper quality cardboard for all too often this leads to breakages in transit. A good product deserves good packaging.

Leading manufacturers of men's wear

STOCK CUTTING WINTER WEIGHT ALL WOOL ESKAY DRESSING GOWNS. The Eskay range includes woollens purchased in New Zealand and from Scotland, England and the Continent.

B. SMUTS-KENNEDY LTD

26-30 Fitzherbert Street, Petone

ESKAY (N.Z.) LTD

Branches: Auckland, Christchurch

"Eskay" of Wellington, the name that is synonymous with high grade mercery in New Zealand, first commenced operations in a rather humble way almost concurrently with the outbreak of World War II. Hostilities naturally curtailed activities for a few years, but as conditions became normal again the companies controlling "Eskay" merchandise were able to introduce new ideas into the men's wear field and, in fact, enabled the better stores throughout the country to be "au fait" at all times with ever-changing style.

B. Smuts-Kennedy Ltd. is the distributing company for Eskay (N.Z.) Ltd., the actual manufacturers of "Eskay" Ties, Dressing Gowns, Silk Squares and Handkerchiefs, and also for many other men's wear lines. Apart from their own manufactured goods these two companies merchandise, and control the distribution of, a wide variety of the world's top grade men's apparel. Such names as Harry Hall Riding Apparel, J. & D. McGeorge Ltd. Gloves & Outerwear, Thurston Braces, Jiffix Belts, Racola Dress Shirts, Double Two Shirts, Craig-na-Cridhe Mohair Rugs & Stoles, Carricaps & Berets, Stoffel (Swiss) Handkerchiefs, Jonni Caps, J. & J. Hood (Bonnets) Ltd., Tam-o-Shanters & Balaclavas, Sammy Scarves, Royal Scot Scarves, Osman Handkerchiefs, Essinay Hose, Aquilla Hose and Viyella Gowns comprise the major part of the present day "Eskay" collection, all leaders in their field and a truly formidable array.

Gradual growth and natural expansion of these healthy and virile companies forced the directors to purchase larger and more convenient premises 10 years ago. It was then that the Head Offices and Factories were moved from Lambton Quay, Wellington, to the present address at 26-30, Fitzherbert Street, Petone. Shortly afterwards, branch offices were opened at 94 Federal Street, Auckland, and 139 Manchester Street, Christchurch.

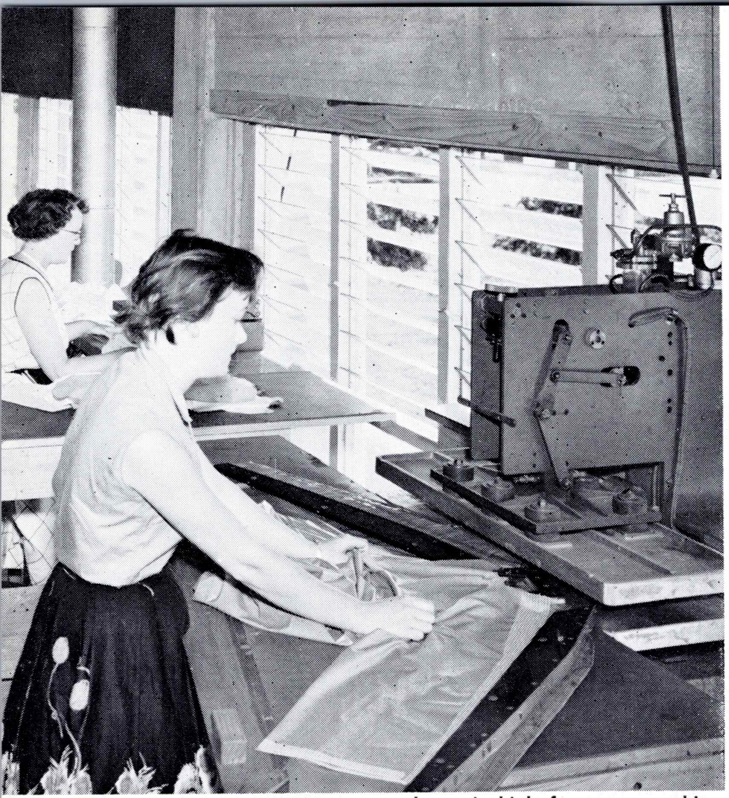
The fixed policy of the companies is to seek out the best that the world can offer and to engage the best possible brains and services both at headquarters and overseas. Annual visits for many years have been paid to the United Kingdom, the Continent, America, Canada and Australia, and, for a considerable period, a sole and personal buyer has been resident in London. Furthermore, representatives of the companies' London Shipping Confirming House pay a visit to New Zealand every second year merely to ensure that complete liaison and understanding is maintained. Fixed policy also lays down that "principals" overseas or sources of raw material supply must always be "actual manufacturers".

Modern factories equipped with the very latest machinery and the finest of working conditions have, in part, been responsible for the present day solidity. A happier staff could not be found anywhere in New Zealand. The directors firmly believe that every conscientious and diligent member of both companies is fully entitled to the best conditions possible. Bonuses commensurate with ability and good service are therefore paid out annually. Many other staff amenities are maintained, not the least being a very fine cafeteria and social club.

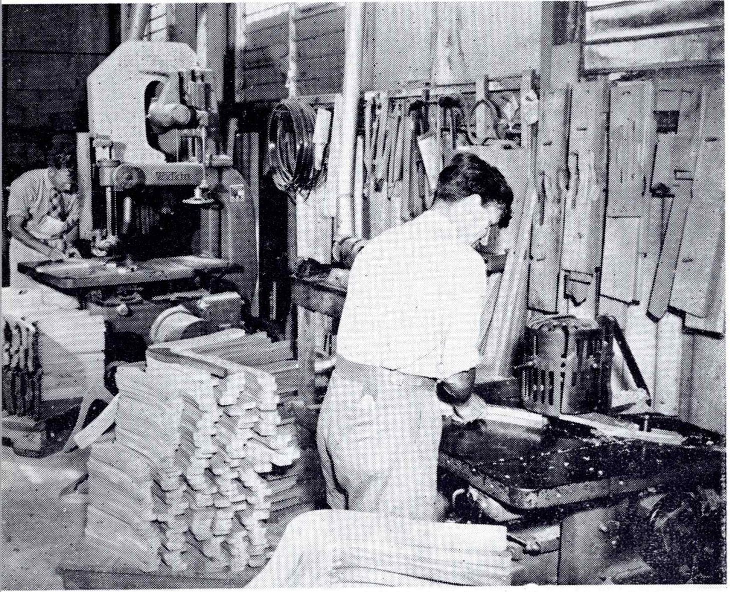
In a country expanding as quickly as New Zealand, the future holds much in store for the younger executives of this organisation. The directors feel that, having laid such a solid foundation, the name "Eskay" will continue to go from strength to strength, and it will always maintain pride of place in the men's wear field.

Chairman of Directors, B. F. Smuts-Kennedy; Managing Director, D. B. Stevenson; Resident London Buyer, J. A. Pawsey; London Shipping & Confirming House, W. A. Sparrow & Co. Ltd., 4/7 Chiswell St., London, E.C.1.

A SECTION OF THE ESKAY TIE FACTORY. Operator (foreground) is hand cutting pure silks.



WELDING RAINWEAR on an electronic high frequency machine.
Sparrow Industrial Pictures



MAKING DINING CHAIR FRAMES in the well equipped furniture factory.
Sparrow Industrial Pictures

Millions of toys, hundreds of thousands of Ladies' Handbag Frames and hardware items, tens of thousands of Plastic Raincoats, and thousands of pieces of furniture, comprise the annual output of the Lincoln factories.

In February, 1946, this business was started when the present Managing Director, Mr. A. Lincoln Laidlaw, took over the two-man firm of Messrs. Higgins and Clotworthy and changed its name to Lincoln Manufacturing Company.

The Company's premises were in Auckland's oldest building, and then consisted of a one-time bedroom in the annexe to the original Auckland Hotel. The wooden hotel had been destroyed by fire many years earlier, but the brick annexe facing on High Street, just below the R.S.A. Building, remained until it was torn down recently to make a small parking area.

The Company pioneered the manufacture of Ladies' Handbag Frames in New Zealand. Just after the war these were not readily available from overseas and the demand soon exceeded the limited production facilities. Consequently, after expanding to the maximum in the High Street premises, the plant was moved to a 1,200 sq. ft. basement in St. Benedict's Street, Newton.

Just one year later, a 4,000 sq. ft. factory was purchased in Newmarket and, shortly after this, Mr. C. Blyth Harper, the present Financial Director, took the risk of leaving a secure position with a well-known public accountancy firm to join the young Company.

Despite a considerable export trade with Australia, the Handbag Frame business proved to be quite seasonal, and, to fill in the slack mid-year period in 1948, the Company made its first "Lincoln toy," a gyroscopic top.

A major toy supplier pioneered handbag

LINCOLN INDUSTRIES

Balm St Newmarket

It was about this time that Mr. William J. Prior, the present General Manager, joined the Company as a part-time salesman.

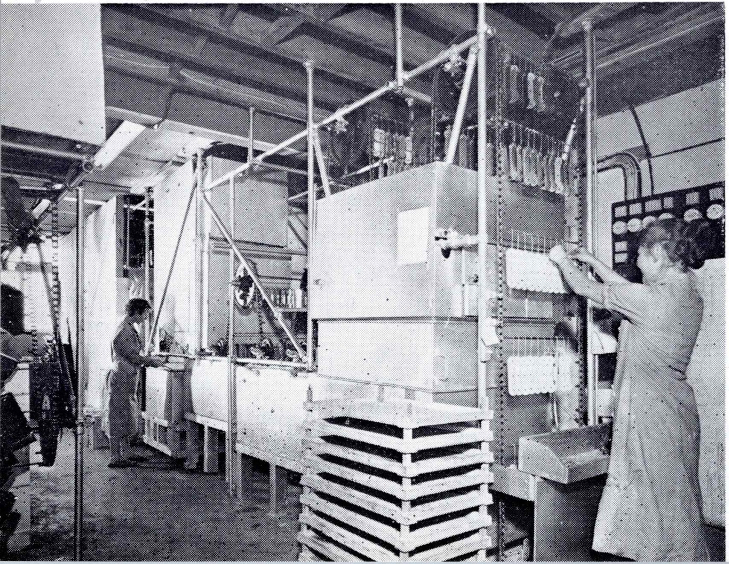
As production expanded, the Company took over additional factory premises in Epsom, Albert Street, and Onehunga, and built two additional floors on the Newmarket premises.

In 1954, a property on Great South Road was purchased and a modern 23,000 sq. ft. factory and warehouse erected. This area was increased to 30,000 sq. ft. in 1958, and, in 1959, a further 10,000 sq. ft. warehouse and 6,200 ft. office block will be built. To allow for further expansion, the Company has also purchased an adjoining 1½ acres of industrial property on the Great South Road.

The Lincoln organisation is kept closely in touch with overseas trends through its overseas offices and associate companies and it has been first, or among the first, in New Zealand with many innovations.

Back in 1947 it was the first, and is now one of the largest users of bright nickel — a post-war development that eliminates manual polishing of nickel plating by electro-chemical means. In its own toolroom, Lincoln has designed and developed an original type of semi-automatic gear for feeding steel strips into power presses; automatic strip steel embossing and polishing plant; electronically controlled, pneumatically operated spot welders with full pressure control; pneumatically operated multiple presses for plastic assembly; complicated cutting and welding jigs for use on electronic high frequency plastic welding equipment; automatic conveyorised pre-treatment, paint dipping and stoving plant.

It is typical of Lincoln that it was the first Company of its kind in New Zealand to install punched card accounting equipment for stock control, invoicing and ledger accounting.



(Left) SEMI-AUTOMATIC degreasing, pre-treating, enamelling and stoving plant.
Sparrow Industrial Pictures

LINCOLN
INDUSTRIES LIMITED

(Above) THE PENROSE FACTORY.

(Right) STACKING CARTONS of toys in the Warehouse.
Photo: Barry McKay

The Lincoln sales organisation handles the ever-increasing production of several large factories through its Penrose warehouse, and maintains permanent showrooms in Auckland, Palmerston North, Wellington, Christchurch and Dunedin, with representatives calling regularly on all wholesale and retail outlets handling Lincoln products.

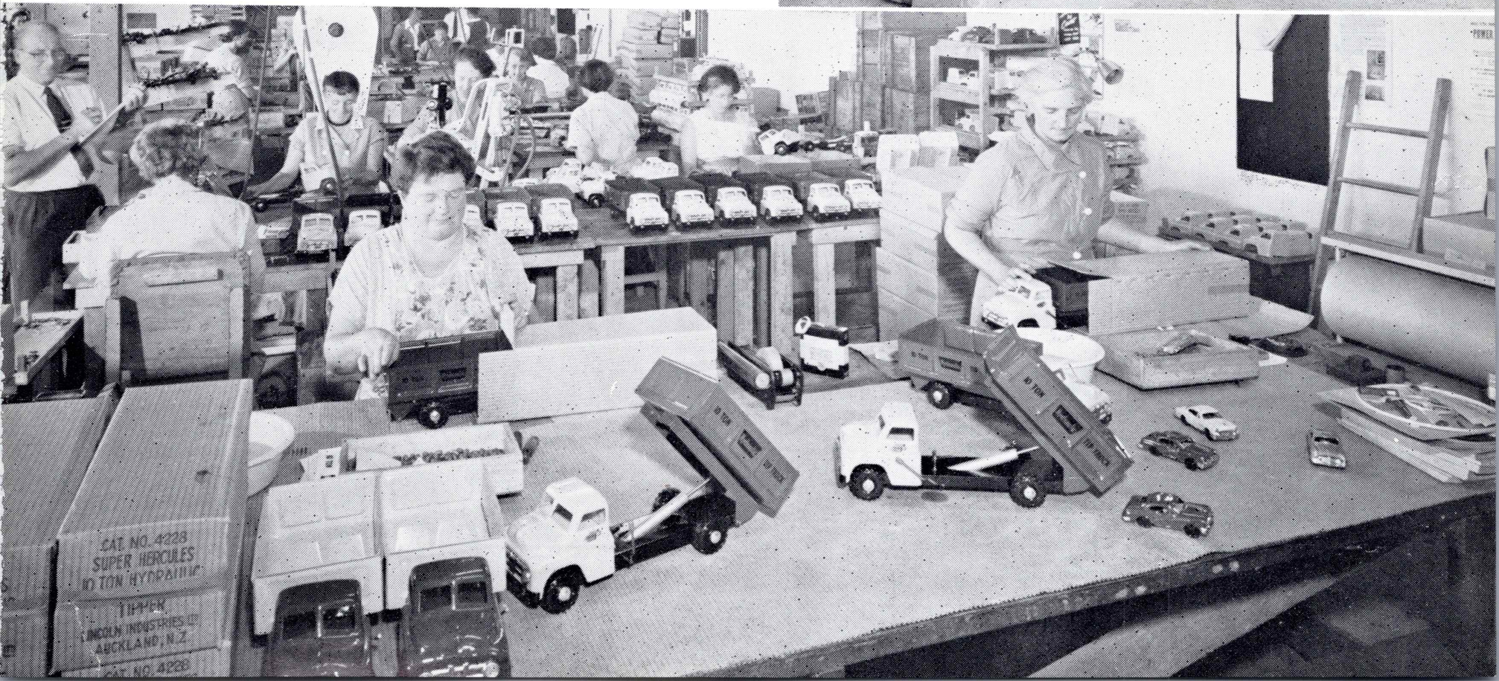
frame manufacturing in N.Z.

LIMITED

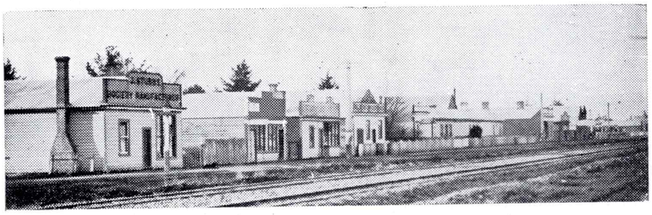
& Penrose, Auckland

SECTION of toy assembly factory.

Sparrow Industrial Pictures

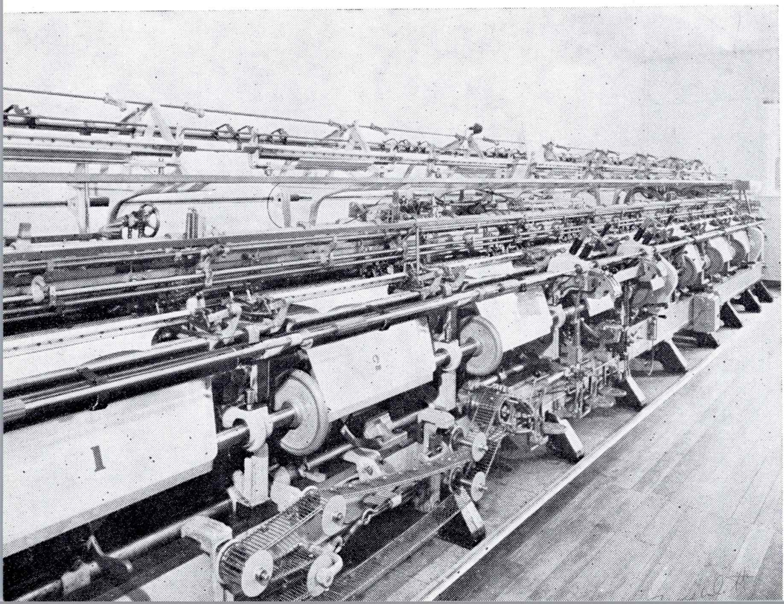

CAT. NO. 4328
SUPER HERCULES
10 TON HYDRAULIC
LINCOLN INDUSTRIES LTD
AUCKLAND, N.Z.

(Above) **FACTORY AND OFFICES** of The Manawatu Knitting Mills Ltd. in Main St., Palmerston North, and (below) the building where operations were commenced in the very early days.



MR. L. V. WINKS, General Manager.

FULLY FASHIONED KNITTING MACHINE on which "Julie Anne" fully fashioned Geelong lambswool and lambswool and Cashmere knitwear is manufactured.



"The worth of a state, in the long run, is

THE MANAWATU

Main Street

Early pioneers of the Manawatu district were John Stubbs and his wife, Mary Alice. In 1880, they sold their drapery business in Barrow-in-Furness and emigrated to New Zealand.

Life in the Dominion began with back-breaking bush felling at Fitzherbert. This was an arduous task for an ex-draper and one-time hosier of Foster Portor's, London.

While awaiting an allotment of a piece of land, the family took a house in Rangitikei Line which they appropriately named "Poverty Farm". John Stubbs, now a railwayman, moved to a railway cottage in Aorangi. Here in order to supplement the family income, he decided to purchase a Griswold hand-operated circular machine for making men's socks, and a Harrison flat machine for outer wear. Here then, in 1884, under very humble circumstances, was founded a business which was to become the leading knitting mill in New Zealand.

Eventually, the family moved into their own property in No. 4 Line at Kairanga. Still later, in 1889, their rough, four-roomed farm house was transported by bullock waggon to the present mill site in Main Street, Palmerston North. As time went by, the original building was constantly added to as business and the family increased, so that it consisted of living quarters, factory and shop. This retail trade continued until 1919.

Stone's early Classified Trades Directory listed Mr. John Stubbs as the only Hosiery Manufacturer in New Zealand. About this time, he made the momentous decision to exhibit his knitted socks at the Palmerston North Art and Industrial Exhibition, which was opened by the Premier, Rt. Hon. R. J. Seddon, in 1896. John Stubbs was awarded the 1st Prize in the Knitting Section. The present Company's proudest possession is this certificate headed: "The worth of a State, in the long run, is the worth of the individuals comprising it." (R. J. Seddon). This is still today a reminder of our responsibilities.

Stubbs' Hosiery Factory was an example of a complete family unit striving towards success. Both Mr. and Mrs. Stubbs worked hard in business, simultaneously tending the needs of their eight children and finding time to retail their products. Their first employees were the two Misses Mexted, who daily walked, in all, six miles to and from work.

At the turn of the century.

John Stubbs struck up a partnership with a Mr. Beale in 1901. A factory was established in Hansen Street, Newtown, a suburb of Wellington, on the present site of the New Zealand Dry Cleaning Co.'s building. The partnership was neither successful nor happy and the business steadily lost £1,000 annually.

The first steam-operated machines for men's hosiery ever to be brought into the country were purchased. Along with other plant, items such as hosiery, men's heavy underwear, jerseys — especially children's — football jerseys, a few cardigans and some stump socks were manufactured.

Worthy of note is that in 1905 three sets of football jerseys were made — the first for the celebrated 1905 All Blacks' tour of England; the second for the All Black team to Australia; and the third for the side which met the South African touring team. These jerseys were of wool, quilted with leather collar, and sold at 5/6d each!

In 1907, the factory was moved back to Palmerston North. Finances were considerably depleted and the family had a hard struggle to recoup their losses. Trade had at all costs to be maintained, and more hosiery machines and a steam press were purchased. On the 7th June, 1912, John Stubbs passed away, and his son, Percy, became head of the family and business. Percy mortgaged his property and purchased the first Cotton's Patent Frame Machine to come to New Zealand. Fully fashioned jerseys and underwear were manufactured.

the worth of the individuals comprising it"

KNITTING MILLS LTD

Palmerston North

Macky, Logan, Caldwell Ltd. purchased the factory in 1919 and the name was changed from Stubbs' Hosiery Factory to The Manawatu Hosiery Factory. The past history of the Company had been one of constant struggle against adversity and lack of finance, and it was obvious that the business could not expand without the injection of new capital. Accordingly, the factory was sold for £12,000 to Macky, Logan, Caldwell Ltd., Auckland. In August of the same year, Percy Stubbs went to England and the Continent to purchase new machines.

In 1920, the buildings were extended, and for a while business boomed. But the depression years were at hand and again the struggle for survival was resumed. A year later, Macky Logan's sent their Hosiery Manager, Mr. W. E. Winks, down as Sales Manager, and in 1923 he was appointed Manager. Mr. Stubbs continued as Mill Superintendent. Under the able guidance of Mr. Winks, backed by the capable technical skill of Mr. Stubbs, the business again flourished.

The present Company was formed and named The Manawatu Knitting Mills Ltd. in 1932, when Macky Logans disposed of all their subsidiary companies. Mr. W. E. Winks was appointed Managing Director of the new Company, which prospered, and during World War II took a major part in supplying woollen knitted goods not only to the civilian population and to our own troops, but also to our allies.

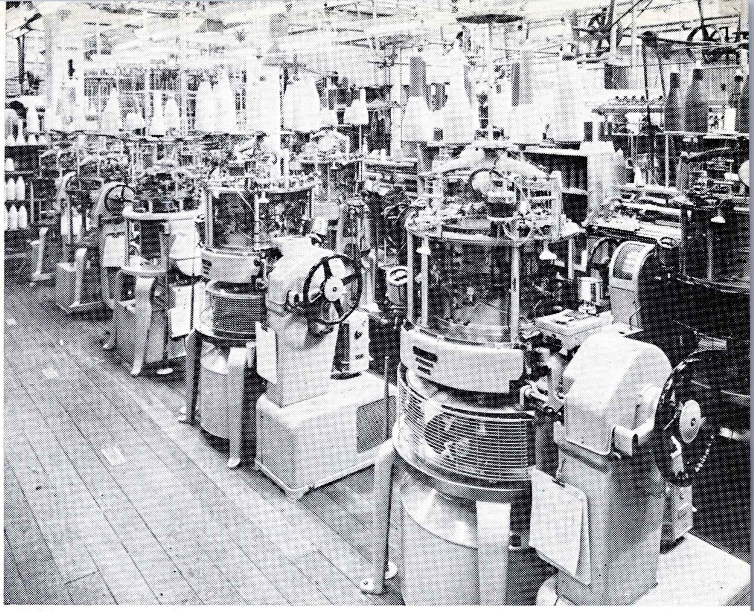
The Company was made a member of the N.Z. Woollen Mill Owners' Association and has the distinction of being the only independent knitting mill to be admitted to membership of that body.

Knitex Limited was purchased in 1937 and transported by rail from Auckland. In 1947, Mr. L. V. Winks, a traveller for the Company, was made Assistant Manager and, a year later, succeeded Mr. W. E. Winks as executive head of the Company. Mr. C. W. Rowntree, Warehouse Manager, was then appointed Assistant Manager.

A period of rapid expansion was initiated — new plant, which was unobtainable during and just after the war years, was ordered, and turnover increased steadily.

Mr. Stubbs retired through ill health in 1950. At the same time, the Company suffered the unexpected and untimely death of the Secretary, Mr. H. Loch. This constituted a major crisis to the new executive, but, with the loyal co-operation of the staff, progress was not impeded. In 1952, Mr. C. Cutfield joined the Company as Secretary and, two years later, Mr. J. Sarelius was engaged as Mill Superintendent.

Since 1948, the Company has spent the large sum of £85,000 in new and modern plant. Underwear, men's, women's and boys' outer wear, half hose, school hose and swimwear are in production. The Knitex factory, which discontinued operations as a subsidiary company in 1957 because of duplication of administration, has been completely remodelled and its high grade products are now manufactured and distributed by The Manawatu Knitting Mills Ltd. Plans are under way for remodelling and extending M.K.M.



A CORNER of the Circular Knitting section. Photo: Bruce Watt Studio

A new Superspeed eight-head fully fashioned outer wear machine of the most advanced design has been installed and highest quality women's fully fashioned outer wear of Geelong lambswool is being produced under the brand of "Julie Anne."

The Company markets it products under the following well-known brands — "M.K.M.", "Ezyfit," "Superfit," "Farmwear" and "Doublewear" half hose in wool and stretch nylon; "Doublewear" and "Ezyfit" school hose; "M.K.M." men's and boys' outer wear; "M.K.M." and "V Neck" men's and boys' woollen underwear; "Julie Anne" and "Knitex" women's outer wear; "Speedo" and "Demoiselle" swimwear.

Raw wool to the finished garment.

This Company represents a class of industry which turns into the manufacturered article one of the raw primary commodities on which the Dominion has so far depended for its existence.

The raw wool of New Zealand is turned into apparel, thereby largely avoiding the necessity of exporting that commodity and then re-importing the finished garment. Undoubtedly, this organisation is a fundamental and decided asset in the build-up of the country's economy. Moreover, backed by 75 years of experience, this industry unequivocally merits New Zealand's whole-hearted support and recognition.

LINKING of fully fashioned cardigans and jumpers.
Photo: Bruce Watt Studio

A New Zealand Industry founded on the use of local wool and leather

'SOFTRED' VULCANISED RUBBER-SOLED SLIPPERS being made at the factory of Buchanan and Edwards, a branch of Felt and Textiles of New Zealand Ltd.

Photo: Gordon Wiles

THE 'HYLARK' FINISHING TRACK at the Knight Footwear Company's Shoe Factory, Lower Hutt. After finishing, each pair of shoes is closely examined before passing to the boxing department.

FELT AND TEXTILES

Activities of this New Zealand-wide manufacturing organisation commenced in 1929 with the acquisition by Felt and Textiles of Australia Limited of a small footwear factory in Wellington, then known as New Zealand Slippers Limited.

Plants for the manufacture of flock, underfelt, paddings, woollen felt, woven carpets and many other products were established during the next decade, and in 1941 Felt and Textiles of New Zealand Limited was incorporated to take over these activities.

The New Zealand Company made its first issue of shares to the public in 1945, and the original issued share capital of £75,000 has been increased over the years to its present figure of £962,500.

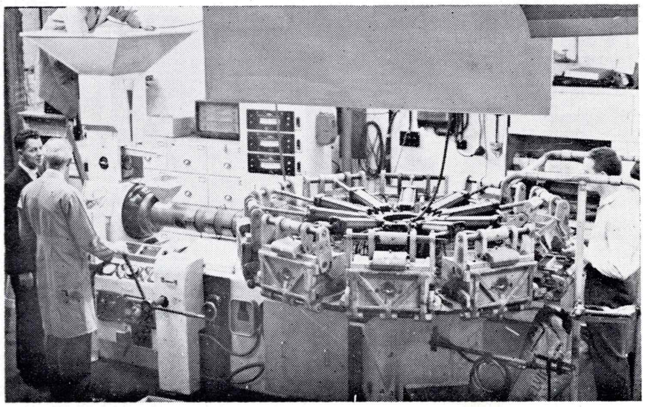
Felt and Textiles of New Zealand Limited and its subsidiaries, The Carpet Manufacturing Company (New Zealand) Limited, Kakariki Wools Limited and New Zealand Carpet Distributors Limited, are now employing over 1,500 persons and the group's annual turnover has increased in the last 10 years from £3,000,000 to upwards of £8,000,000.

Footwear

The Company manufactures popular women's shoes at its Knight Footwear factory and all grades of slippers at its Buchanan & Edwards factory, both of which are situated in a large modern building at Lower Hutt, and between them employ over 400 people.

Slippers are made by a variety of processes and in many different materials, and the Company's slipper factory provides for all sections of the trade from the cheaper slippers sold by

'SUNNY' PLASTIC SANDALS being made in one process on an injection moulding machine in the plant of Buchanan and Edwards, Lower Hutt.

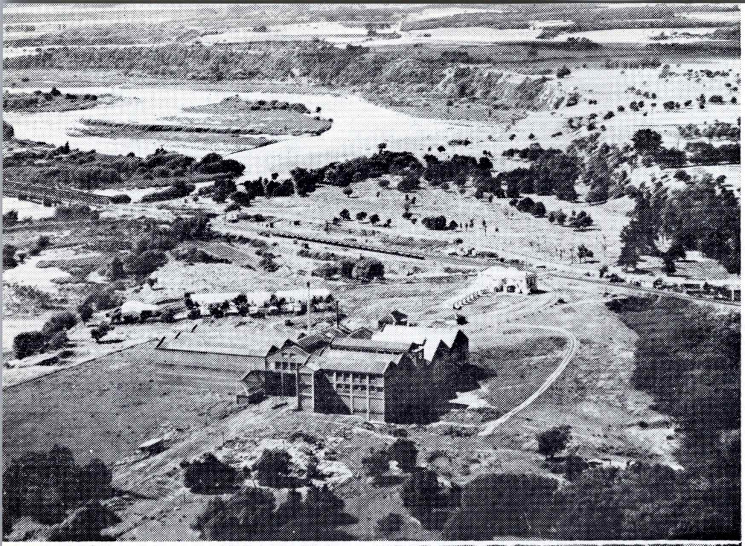


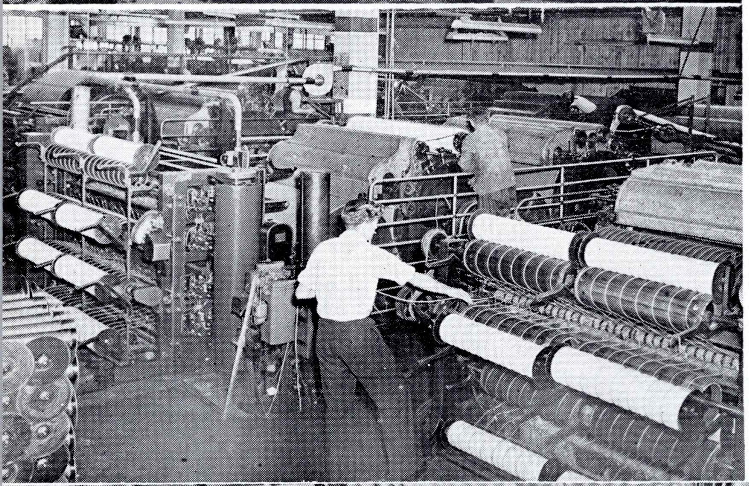
FELT & TEXTILES OF NEW ZEALAND LTD.: Woollen felt and floor covering factory at Lower Hutt.

OF NEW ZEALAND LIMITED

85 Customhouse Quay, Wellington

A 27-INCH AXMINSTER CARPET weaving loom in the factory of The Carpet Manufacturing Company (N.Z.) Ltd.





chain stores to the higher grade Be Easy and Softred vulcanised rubber soled slippers. Popular demand for casual footwear is catered for by the Knight Footwear Company in its productions of Hy-Larks, Demoiselles, Footsavers, Tee Vees, and Knockabouts. The Company keeps abreast of overseas technological and fashion trends in footwear and one of the more recent installations at Lower Hutt consists of an injection moulding machine capable of producing plastic sandals by a single operation at a very high rate.

Other types of popular women's shoes such as Contessa and Adorables are manufactured by another branch of the Company, the Carlyle Footwear Company in Christchurch.

Footwear components

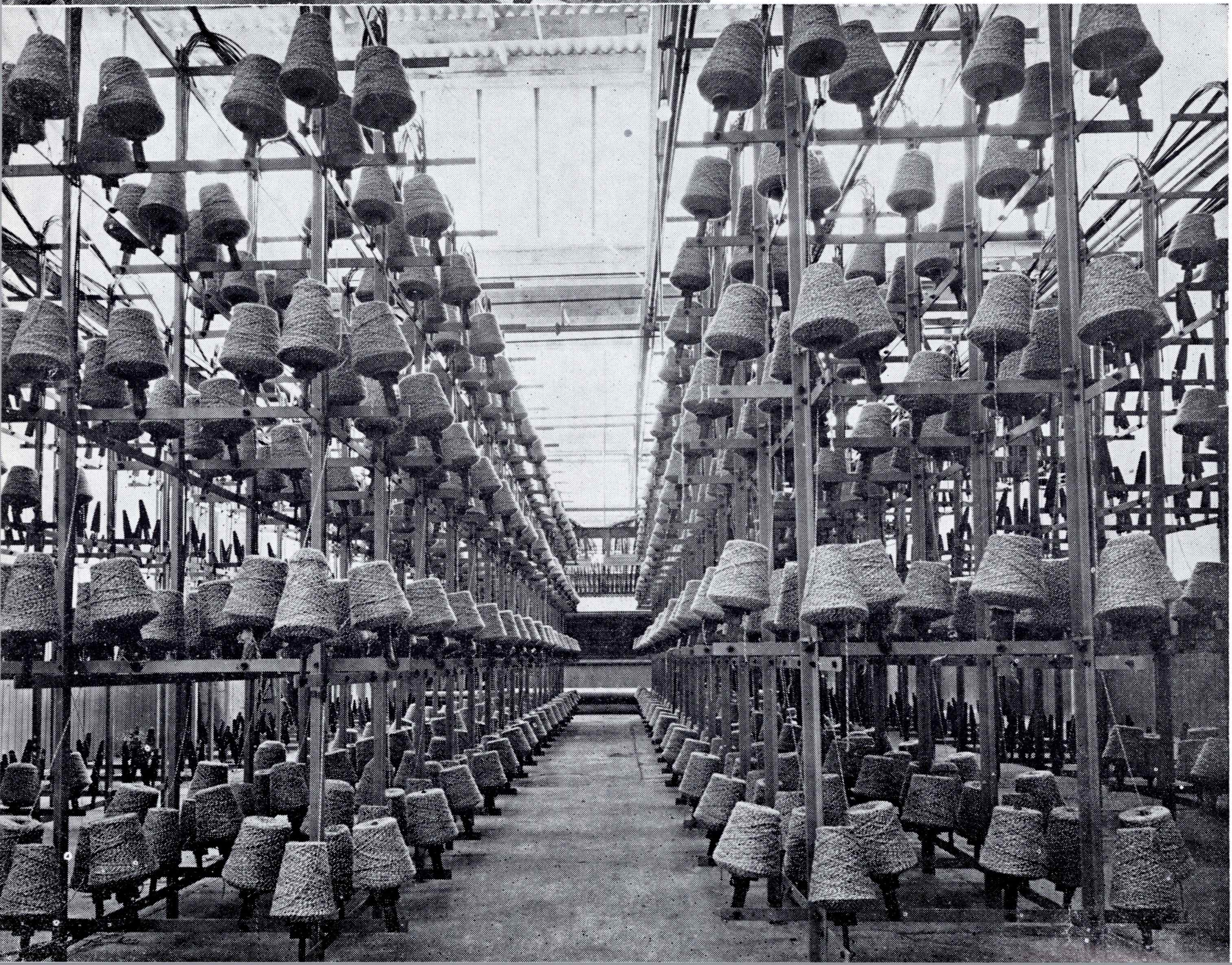
Footwear production had expanded by 1942 to the stage where it was necessary to establish a regular source of supply for many of the components used in the manufacture of shoes and slippers. The Wellington and Auckland factories of T. J. Davenport and Sons were taken over in that year, and, since then, they have supplied the Company's requirements of soles, heels, stiffeners, shanks, moulded insoles, toe puffs, etc. In addition, many of the other New Zealand footwear manufacturers draw their supplies of these components from the Company's T. J. Davenport and Sons branches.

Woollen felt

The manufacture of woollen felt is an interesting process. Firstly, the greasy wool is scoured to remove dirt and natural oil. It is then fed into a carding machine which has a series of drum-like rollers faced with a multitude of small wire bristles which open and straighten the fibres of the wool. A fine film of wool is produced and this gains strength as one layer is placed over another, until the resultant wad is fed into the "felting" or flat hardening machine. Extreme pressure and vibration are then applied, with heat and moisture being admitted in the form of steam.

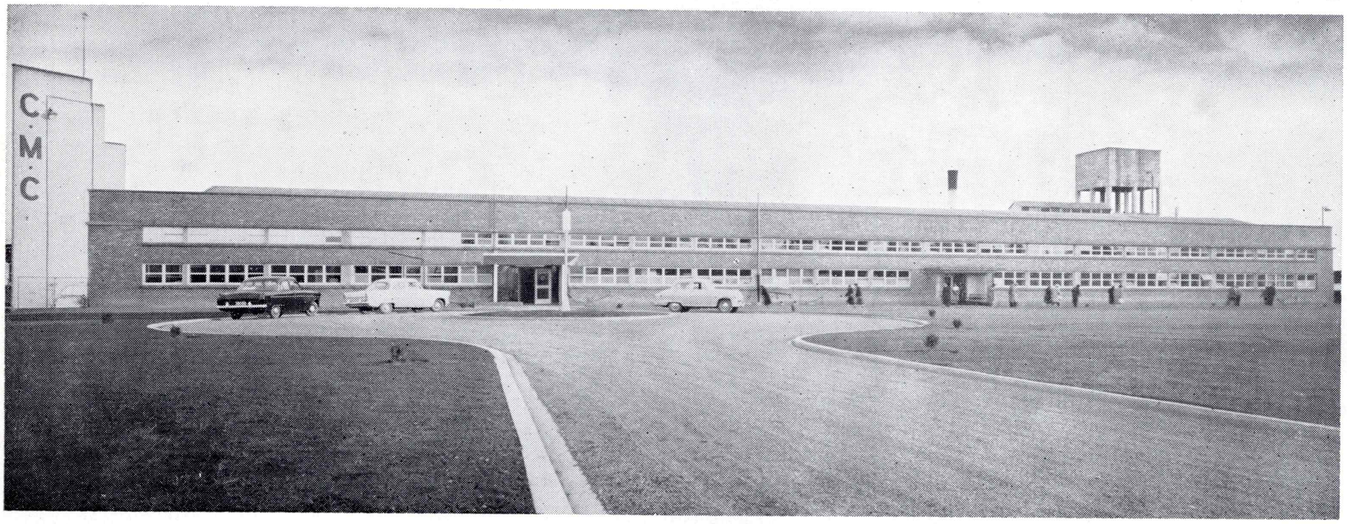
(Upper left): KAKARIKI WOOLS LTD., situated on the banks of the Rangitikei River, near Marton.

(Left): CARDING WOOL into slivers prior to spinning at the Christchurch carpet factory.
Photo: J. P. Wilson



TUFTED CARPET PLANT, LOWER HUTT: Bobbins on the creel, the yarn being fed through copper tubes to the tufter.

Photo: K. E. Niven



THE CARPET MANUFACTURING COMPANY'S MILL, RICCARTON, CHRISTCHURCH: Situated in a lovely garden setting, this is one of the most up-to-date factories in New Zealand.

Photo: Mannering and Donaldson

The resultant felt is then further strengthened by being pounded in a milling machine. After this, the felt is washed and dried and finally passes through dyeing and finishing processes. Woollen felt does not ravel, shred or fray and can be brought to almost any consistency from the softest of fabrics to the hardness of seasoned wood. The different grades are used in a variety of ways, ranging from manufacture of slippers and millinery goods to the well-known Feltex floor-covering. Heavier and harder felts are cut into washers, buffing wheels, etc., and used as anti-vibration mountings for heavy machinery.

Carpets

The Company manufactures Vanro and Harewood axminster, and Arawa and non-crush de luxe Wilton carpets through its subsidiary, The Carpet Manufacturing Company (New Zealand) Limited, Christchurch. The factory was erected in 1946-1947, and is set in garden surroundings on 9½ acres of land at Riccarton; approximately 400 persons are now employed there.

The majority of the looms in this factory are of the spool axminster type, and vary in size from 27 inch width to broadlooms of 12 ft. wide.

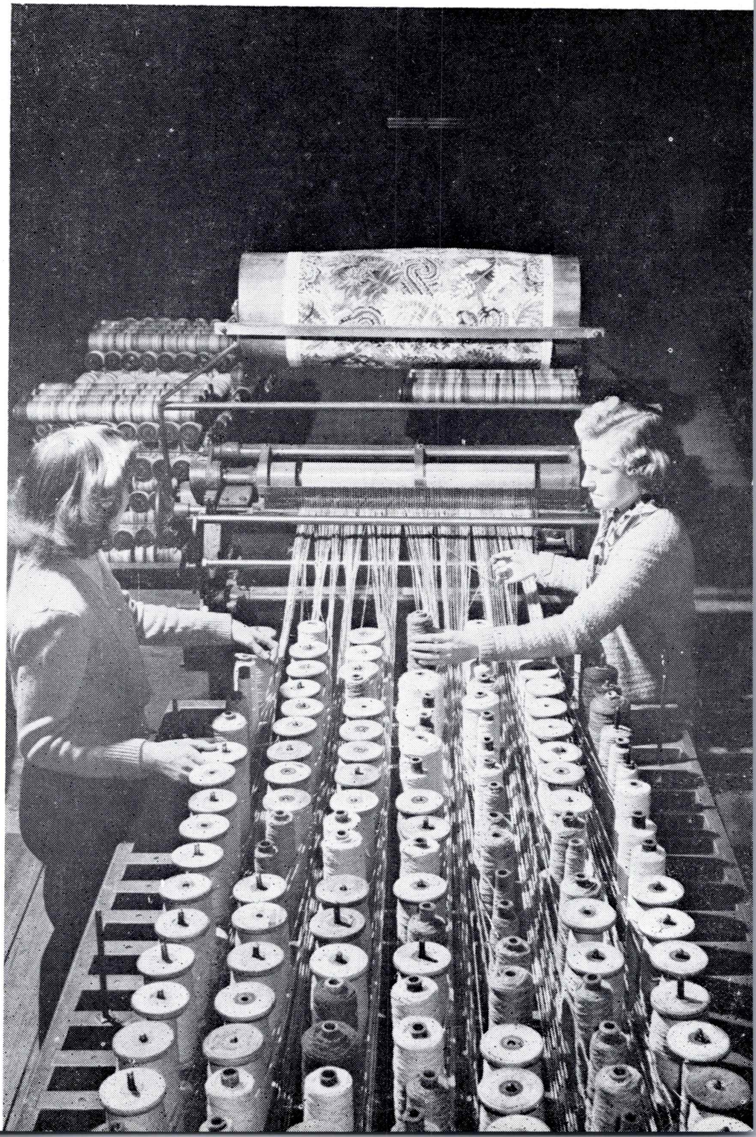
New Zealand wool is particularly suitable for the manufacture of carpets, and the locally made article compares more than favourably with carpets produced by the older established industries of the Northern Hemisphere. The factory is modern, the plant of recent design, and most of the key personnel have come from Kidderminster, the home of English carpets.

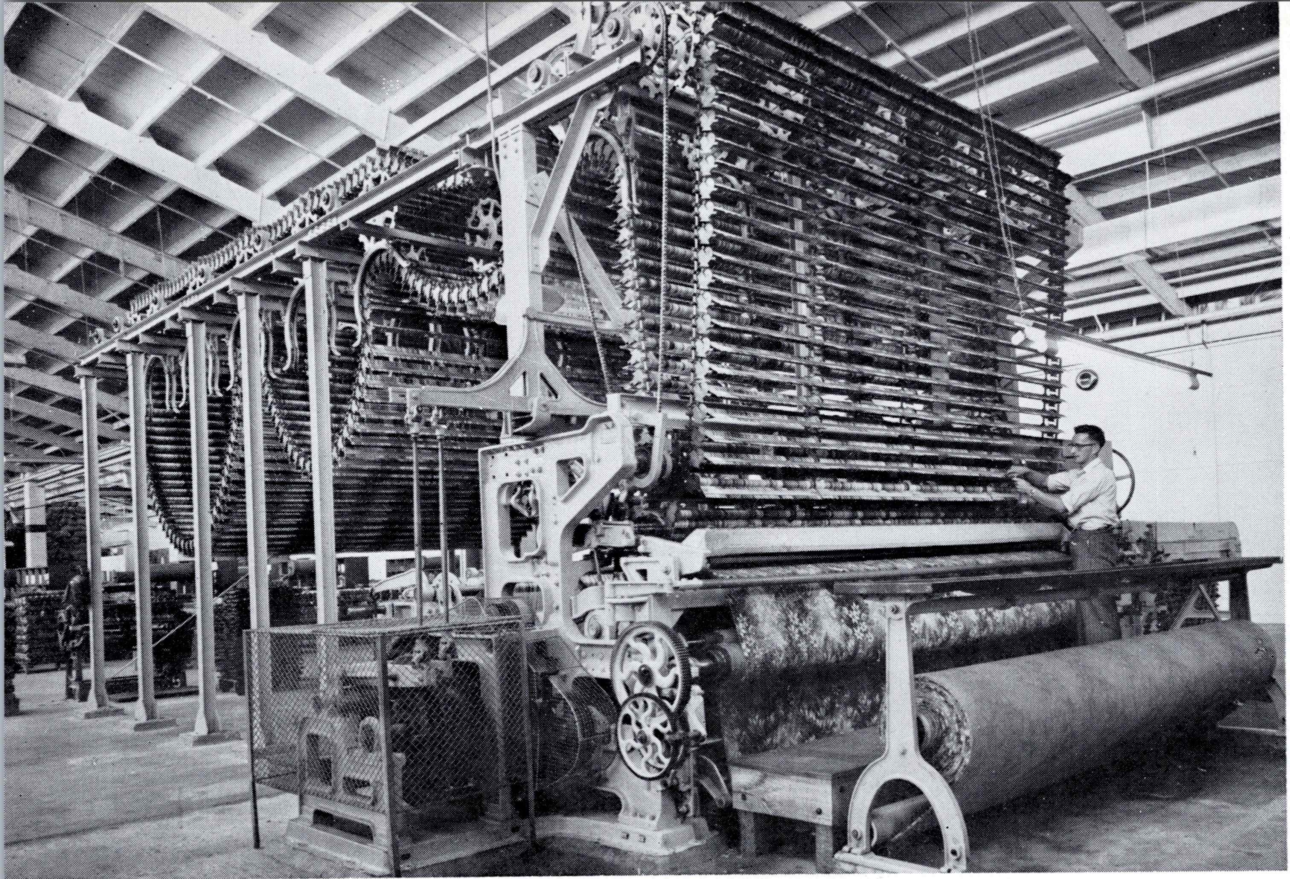
Greasy wool purchased by the Company's buyers is scoured at its wool scour at Kakariki, near Marton. It is then shipped to Christchurch where it is blended with a small percentage of imported wool, to ensure that the resultant pile is as resilient as possible. The wool is carded in order to comb it into continuous loose fibres, spun into yarn, and then dyed to the many colours required for Axminster and Wilton production.

The axminster designing team have now produced over 300 designs and, apart from traditional florals, persians, autumn tones and contemporary patterns, they have introduced many highly original patterns based on New Zealand native flora. The finished design is drawn in full colour on stiff paper which conforms in width to that of the woven carpet. It is divided into tiny squares, each of which represents one tuft of wool, and this design paper is then used as a basis for setting up the bobbins to conform to the desired pattern. When each complete row is set up, the wool is automatically wound on spools and the completed spools are inserted into an endless chain which feeds the looms. Cotton and jute backing materials are fed to the loom from the sides, while the spools descend in turn from above. Each loom makes approximately one roll of carpet in an eight-hour shift.

From the looms the carpet goes through the finishing stages in which it is mechanically brushed to remove loose particles of wool, handpicked to detect imperfections such as uncut pile, mechanically sheared to ensure an even height of pile, steamed and starched, sheared once more, and finally in-

SETTING FRAME in operation, the Riccarton Carpet Mill.





THE 12FT. WIDE AXMINSTER CARPET BROADLOOM in operation at the Christchurch factory.

Photo: Mannering & Donaldson.

spected inch by inch, rolled, measured and weighed before it is despatched to the warehouses.

The lower priced floor covering field is catered for with needle-loom carpets under the trade names of Bisonia and Decora. Each consists of a blend of animal, vegetable and synthetic fibre, needled to a hessian base and sized with starch or rubber in order to provide permanency and stiffness. These products are produced at the Company's felt and floor-covering mill at Lower Hutt, and have retained their popularity in spite of the many and varied imports of popularly priced and novelty floor coverings from overseas during the last decade.

In 1957, a plant to manufacture tufted carpet commenced operations. This is a new type of carpeting which had its origin in America and has now become universally popular. Tufted carpet has been produced using a variety of synthetic materials in the pile, but experience has shown that a mixture pile containing New Zealand wool is the most suitable for local conditions. The Company's Springdale tufted carpet is now made in this way.

Summarising the above, it will be seen that a complete range of floor coverings is produced by the Company — from Bisonia needleloom at the lower-priced end, to Harewood Axminster and De luxe Wilton at the top.

Woolscouring

Until 1949, wool required for the Company's various manufacturing processes was scoured at the felt mill at Lower Hutt, but in that year a substantial building was purchased at Kakariki near Marton, situated on 60 acres of land on the banks of the Rangitikei River. The scouring and carbonising plant was modernised and transferred there. This unit has its own railway siding, a plentiful supply of suitable water, and facility for disposal of industrial effluent.

Wool is sorted and scoured for the Company's requirements, as well as on a commission basis for export, and one of the byproducts of the industry is the recovery of wool grease for lanoline. Being some distance from Marton, the factory is to some extent self-supporting in that a number of houses, flats and single billets are available for staff use.

Laces, Braids, Cords, etc.

The Lynn Laces factory in Auckland was acquired in 1940; at that time it was employing approximately 20 persons engaged in the manufacture of shoe laces and braids. The staff has now been increased to over 100, and a variety of other products are made for industrial and domestic use. These products in-

THE DESIGNING ROOM AT CARPET MANUFACTURING CO., CHRISTCHURCH. Of interest is the New Zealand souvenir map carpet rug displayed.

Photo: Mannering & Donaldson.

N.Z. CARPET DISTRIBUTORS LTD., Auckland Showrooms

Sparrow Industrial Pictures

clude nylon and dacron cords, ropes and fishing lines, fringes, pipings, webbings, petershams, trimmings and tuftings.

Underfelt, Padding and Flock

A large proportion of New Zealand's underfelt requirements is supplied by the Company's John Grant and Company factories in Wanganui and Dunedin. Underfelt is made from reclaimed and raw jute, which is needled on to a hessian base. Its use materially lengthens the life of all floor coverings and also assists in providing warmth and comfort.

Paddings and waddings are manufactured at the Company's John Grant and Company factory at Lower Hutt and are made from such materials as coir, jute, cotton, rayon and blends of these materials. Industries serviced by these products include motor body assembly, bedding manufacture, furniture manufacture, plumbing, footwear and clothing.

Flock is a shredded material made from textile wastes and is used in the padding and upholstery trades. This material is produced by the Company's John Grant and Company branches in Auckland and Wellington.

Distribution of the Company's products

All footwear produced by Felt and Textiles of New Zealand Limited is distributed by New Zealand Footwear Distributors. Floor coverings, textiles, and industrial products are distributed by the Company's subsidiary, New Zealand Carpet Distributors Limited, with headquarters in Christchurch and branches throughout the main centres. This distributing company was formed in 1951 and now has a staff of over 80 persons. Modern showrooms are operated in the four main centres, and a furnishing advisory centre is located in Auckland. A mobile public relations unit is in operation, and a technical advisor with many years of experience in carpet manufacture is available full-time to assist retailers to understand thoroughly the product they are selling to the public.

N.Z. CARPET DISTRIBUTORS' FURNISHING ADVISORY CENTRE in the T. & G. Building, Auckland.

Photo: Clifton Firth

. . . remarkable attitude the function of clothing

FAYREFORM

Victoria St West,

Fayreform Ltd
FAYREFORM FOUNDATIONS
TER PAN
UNDATIONS
FAYREFORM LTD

It is interesting to note that the history of clothing has had more than a mere casual connection with the ever continuous evolution of the silhouette. The changing line has not resulted from sheer fickleness or caprice on the part of the individual. Rather its origin may be traced from the fact that the attire of any period of history belongs directly to, and forms a natural part of, the architecture and economic background against which it is worn.

Watch your line!!

The changing silhouette is demanded by each new phase. Designers and manufacturers have constantly to adapt themselves to the texture and design of cloth of the particular period, and to be unfailingly cognisant of the human element—ever trying to improve Nature by mechanical aids — and sex attraction, primitive though it may seem but nevertheless real.

The beginnings of Fayreform Ltd. fell into some such period. Mr. A. Galloway knew exactly what was required in New Zealand and was aware, too, that other establishments were not giving the public just what they wanted. Although the country and the world at large were passing through a very unstable phase—1933—initiative, self sacrifice and ability led Mr. Galloway on to success.

Sincere in the conviction that if one has quality goods, a medium range, a reasonably priced product, and avoids marketing cheap and inferior articles, he believes that nothing should deter one from selling those goods and so achieving one's aim and object in life.

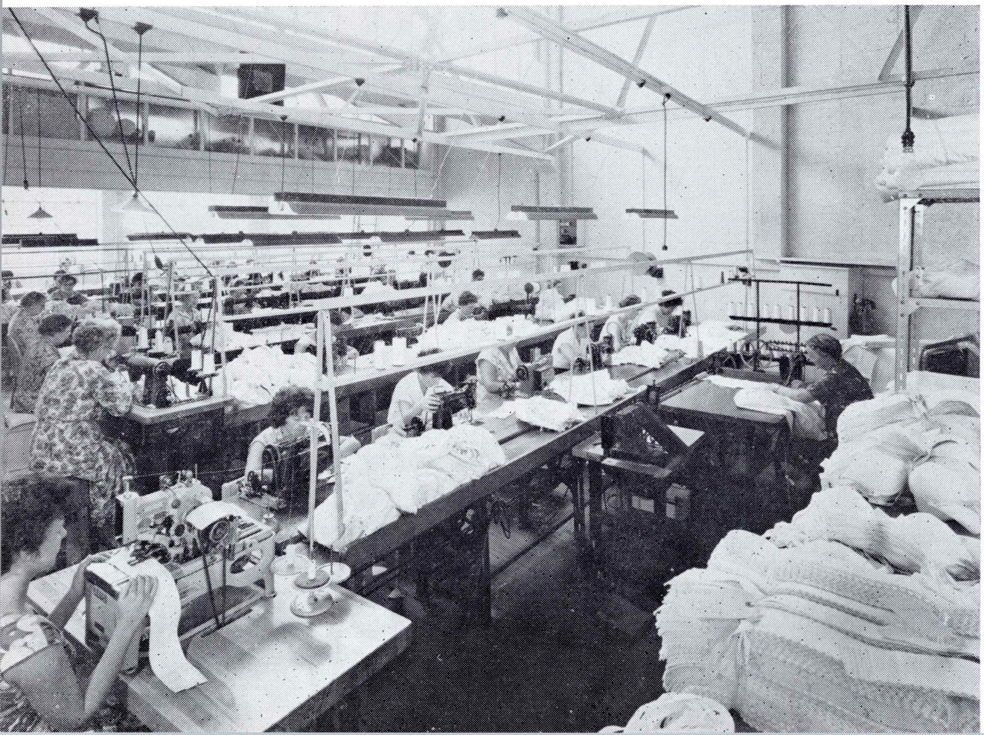
The present thriving business was conceived and built upon a borrowed capital of £50, borrowed machinery, a humble beginning in a garage, one employee, and no previous experience whatsoever in cutting or making. Here then in Auckland, A. Galloway began to build his product upon the human frame, meeting the needs of the New Zealand market and solving the problem of keeping the too redundant flesh of the female within fashionable bounds and assisting every woman to attain her ideal — that Grecian figure and form. A large measure of the Company's success has been directly due to Mrs. A. Galloway, whose unfailing assistance has been incalculable.

Business develops a new importance and complexity

The old maxim, "One had as good be out of this world as out of fashion" augured well for this Company, which produced quality merchandise incorporating smart fashion foundation features.

Very soon the 14ft. x 12ft. garage proved inadequate. Business now began to take in the whole of the Auckland Province. More space was required. A further section was built on to the garage contrary to local regulation but ultimately condoned for a maximum period of two years. Staff had increased by now to 12 in number. Within 16 months, however, the Company moved into the city proper and, eventually, in 1942, the present site was purchased. Here the first commercial building to be erected in Auckland was built after World War II.

Subsequently, an adjacent site was purchased and a building constructed. It was thought that this factory would be large enough for all time. But, no, in 1952 the Company branched out into premises at Papakura, and later Manurewa, and still space proves to be at a premium.



THE MACHINE ROOM at Fayreform.

of mind towards especially underclothing

LIMITED

Auckland

A SECTION of the cutting room.

Back in 1937 — reflecting but four years of business—the one product marketed was the brassiere. Customers, however, were enquiring as to whether the Company could manufacture corsets. Unfortunately, it did not have the know-how. As a result of these enquiries, Mr. Galloway sent his eldest son to Canada and America — the Home of Corsetry — to work in foundation garment factories there. This step paid off well.. In 1951, on a trip to the States Mr. Galloway contacted Mr. Henry Plehn, president of Peter Pan. Their meeting resulted in Fayreform Ltd. becoming the first licensee to handle garments for Peter Pan Foundations Inc. Continued close liaison between executives of the two Companies over the years has welded a real understanding and a solid sales promotion policy.

An essential to this trade is that the manufacturer must be in a position to recreate and readjust foundation garments to meet local conditions and requirements. And it is noteworthy that the joint effort on the part of this predominately family unit, plus confidence in staff — many with more than 20 years' service — faith in the fact that their garments are of the highest standard of workmanship, material and quality, providing the newest, smartest styles and range, has placed this organisation in the forefront of industry within the Dominion.

The individual must attune herself to this ever changing world of fashion and fabric. On the other hand, the industry must give women just what they require. And here the brains and ability of designers, ever thinking up something novel and new, creating and recreating, play a vital role. This unprecedented service the Company, in association with Peter Pan Foundations, is able to offer the women of New Zealand.

This is an intense business. Every piece of cloth before it goes into a garment is tested in every conceivable way. It is tested first for colour — there are notably hundreds of shades of white — the choice of the exact shade is governed by the current trend in taste. Further tests through light, for strength of waft and weft, in washing, in drying, etc. are undertaken. In consultation with manufacturers of cloth in America, England, Switzerland, Germany, Australia, etc., every piece of material is laboratory tested and rejected if found to fall short of strict specifications. Bearing in mind that every few years a change in taste and colour ensues, e.g. it has been from greys to pink, Tea rose, peach, beige and now in white, one becomes aware of the peculiarities and ramifications attendant on this trade.

Furthermore, 25-27 operations go into the manufacture of every garment before completion. No one person finishes a garment, but a team. From the time designers visit the fashion houses of Paris, London, New York — at one time it was Vienna — and return home to create and design foundations in relation to what they have seen in outer garments, there is an unending check-point before the article finally reaches the warehouse ready for despatch.

Suffice is to say that Fayreform along with Peter Pan Foundations will always continue to create something new. Their garments will most certainly give that real look in perfect comfort; mould and flatter you, perhaps above all, make you feel delightfully, lightly, feminine.

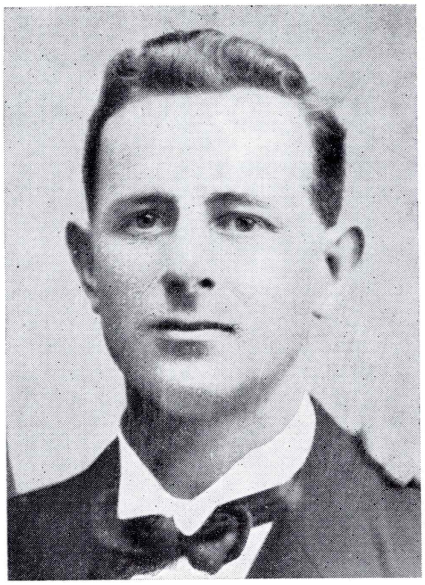
FINISHING AND PACKAGING DEPARTMENT.

Photographs by Sparrow Industrial Pictures

Increased efficiencies and production economies essential to the Nation's future economy

LICHFIELD (N.Z.) LTD

179 Tuam St Christchurch



Mr. H. C. Govan
1922

Mr. R. H. Aston
1922

Mr. H. C. Govan
1954

Mr. R. H. Aston
1954

As a company grows and expands its production facilities, it is invariably confronted with new, and perhaps, major problems. In order to be successful, it is incumbent that it should familiarise itself with every department of business—marketing, accounting, production, finance. In short, it must develop a new concept towards management and production.

The Lichfield organisation, an example of a complete unit of industry, has attuned itself to this concept. Thus the stage is set for a profitable campaign beneficial both to the industrialist, through its many facets to the eventual consumer, and ultimately welding itself as a vital link into the build-up of the Nation's future economy.

The birth of this Company goes back to the year 1917. In Christchurch, a business partnership between two men set out to make flannel shirts for the New Zealand forces of World War I. In a small workroom with a staff of six women—each specialised in some particular shirt-making operation — and equipped with some second-hand sewing machines, they began production.

After six months the partners, Mr. H. C. Govan and Mr. R. H. Aston, saw the need for larger premises to keep abreast of production, and several moves were made. The post-war retail market was catered for and, simultaneously, the firm began importing and selling goods from Great Britain and shirts manufactured from imported cotton cloth.

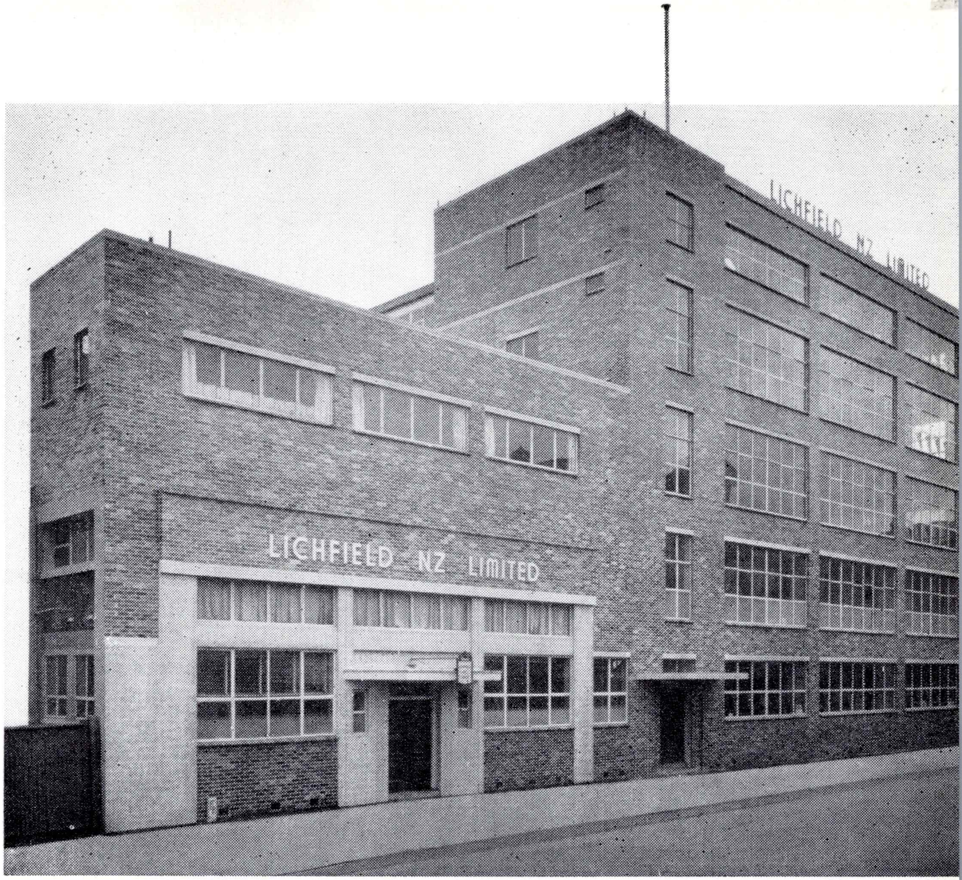
About this time (1922), a private limited liability company was floated. By 1927, the Company discontinued importing goods and began to concentrate on making shirts and advertising their product, widely. Result: increased sales and lower production costs, necessitating a further move—this time to a large building in Tuam Street.

Lichfield, further, came to an arrangement with an Australian factory to purchase cotton cloth in bulk. This liaison was advantageous. The Australian Company was a licensee of one of the largest American shirt manufacturing companies. Thus the exchange of ideas, application of specialised plant, efficiency methods, research laboratory data and the privilege of using patented machines and processes were made available to Lichfield.

Since that time, this progressive manufacturing Company has regularly sent executives and top-ranking personnel to visit overseas countries. Consequently, the Company has been able to embody plant in its own policy developments in manufacture, sales and advertising techniques from the United States, Canada, England, Northern Ireland, the Continent, Australia and South Africa.

This Company bustles with vital new energy—a force that has transformed the name 'Lichfield' into a household word. Today, its modern five-storeyed reinforced concrete building, brick-faced, stands on Tuam Street, and houses the head office of the Company and main manufacturing plant which produces fashion shirts (cotton and nylon).

Along with two other plants, one at Kaiapoi making cotton fashion shirts, the other at Lyttelton making sports shirts, pyjamas and underwear, a clear picture is gained of how this organisation operates. The greatest use is made of the most ideal surroundings, and its buildings incorporate such features as flexible lay-out, smooth traffic flow, economical operating and maintenance costs, carefully planned, long range future expansion potentialities.



HEAD OFFICE and MAIN PRODUCTION PLANT of LICHFIELD (N.Z.) LTD.

Mr. L. H. Govan
Joint Managing-Director

Mr. J. G. Aston
Joint Managing-Director

Serving Industry — serving the Dominion

Lichfield, perhaps, stands alone as a milestone in the advance of the shirt manufacturing business in New Zealand. For practical reasons, as well as for prestige purposes, one might to advantage analyse both the problems confronting this Company, and the solution to them, and then, too, the advantages accruing to this establishment which have done much to enhance its already favourable position among industrialists of the mid-20th century in New Zealand.

The shirt, like many other products, is subject to variable consumer needs which quickly affect the demand. Facilities must be adaptable to these variations which, quite often, cannot be dictated or anticipated. And so, let us turn to the programme sponsored and followed by this imaginative and creative concern, starting from the basis of the industry — raw cotton.

Raw cotton to finished fabric

The shirt owes its origin almost entirely to a remarkable flowering shrub —the cotton plant—which is grown, in order of merit, in North and South America, India, China, Persia, Turkey and Bulgaria.

Cotton ranks today as the greatest textile raw material, forms the basis of livelihood for millions of people in both hemispheres, and is among the most valuable of our natural products.

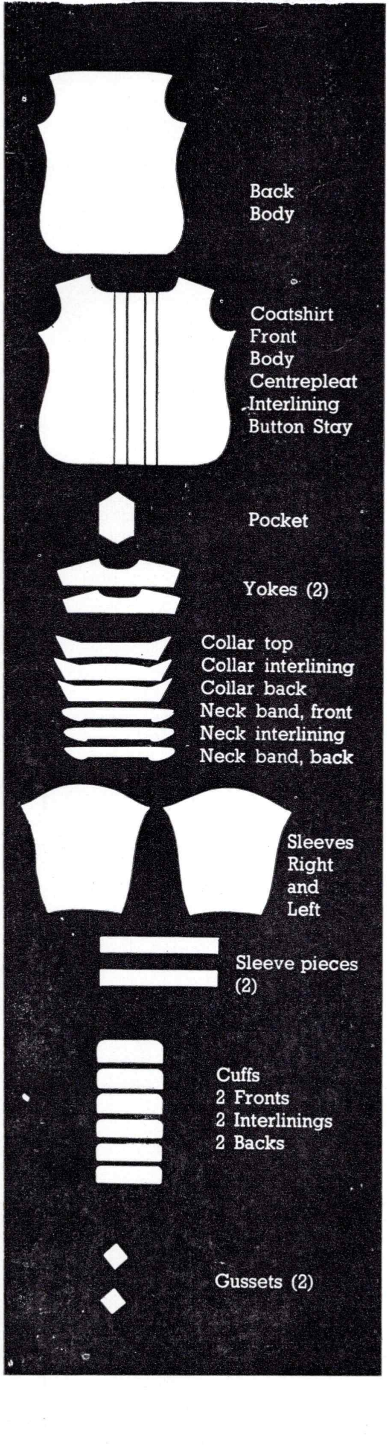
Cotton fibre is produced under many different conditions. It will grow in any region which has a warm climate and ample moisture, either by rainfall or irrigation. The latter part of the growing period should be dry. The cotton plant develops flower pods on its branching stalks, which eventually burst and display the blossoms. The flower is short-lived and falls, leaving exposed the "cotton ball" — a triangular pod which eventually bursts, revealing tufts of fibre known as cotton.

Commercially, the crop is divided into five groups. Arbitrary lengths determine the type and its value. The long staple (1.8in.) is by far the most valuable, its greater length making it more adaptable to fine spinning, and the cloth has greater strength than that made from short staple varieties.

PART OF THE LICHFIELD PLANT where the cloth is carefully tailored. Here, in spotless, sunny rooms, work the nimble-fingered people who make the famous Lichfield shirt.

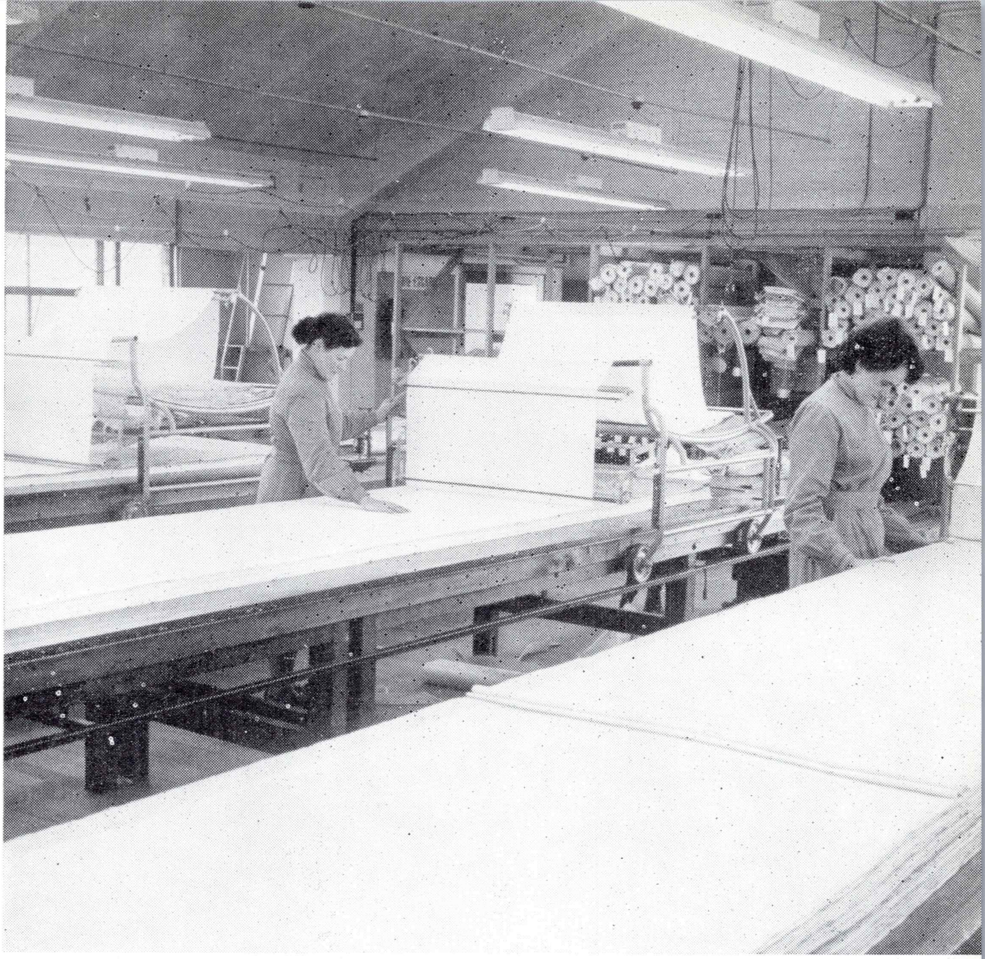
The most valuable of the long staple types is Sea Island Cotton — native of tropical America. Then comes Egyptian Cotton, Upland Long Staple, Upland Short Staple and Asiatic.

All impurities in raw cotton are removed by a process of agitation called "Ginning." At the mills, the bales of cotton are further cleaned before being wound on to a "lap" ready for carding. The carding machine arranges the fibres in a near-parallel disposition. Through this combing action the cotton leaves the machine in a soft untwisted rope called a "Sliver" and is coiled in a can for further processing. "Flyer" or "Speed Frames" then reduce the thickness of the sliver, add a twist and, finally, wind the thread or yarn on to cone-shaped "Cops". Greater strength, regularity and smoothness are produced by "doubling" or "folding" more than one thread on to a bobbin.

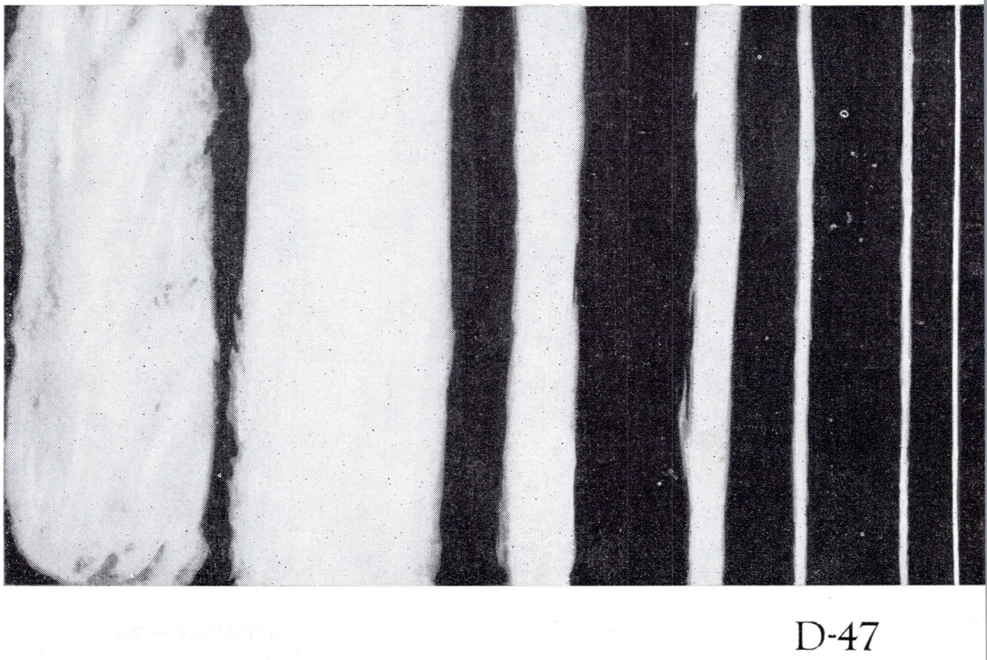


IN A LICHFIELD COLLAR-ATTACHED SHIRT there are 27 separate parts, and, before the actual cutting commences, these parts are accurately marked on the top layer of cloth.

Back Body
Coatshirt Front Body Centrepleat Interlining Button Stay
Pocket
Yokes (2)
Collar top
Collar interlining
Collar back
Neck band, front
Neck interlining
Neck band, back
Sleeves Right and Left
Sleeve pieces (2)
Cuffs
2 Fronts
2 Interlinings
2 Backs
Gussets (2)



THE CUTTING ROOM WITH ITS MILES OF CLOTH FOR LAYING UP. These machines take bolt after bolt of fabric and regulate them to neat, accurate, and workable symmetry. From the library of style shapes come the scientifically proportioned designs to plan the 'lay' for cutting.



STAGES in cotton spinning.

Weaving

Cloth construction in its simplest form consists of "Warp" threads running lengthways, and "Weft" threads interwoven across them at right angles. Variations in cloth construction are introduced by altering the density or interlacing of the warp or weft.

Good quality cloth undergoes several processes—bleaching, singeing, kiering (boiling cloth in a weak solution of caustic soda), mercerising (giving cloth a "silk finish"), dyeing, calendering (adding lustre to cloth), pre-shrinking.

The Lichfield Shirt

Lichfield buyers take many factors into consideration when choosing cloth. They are: cloth of the right construction, spun and woven to Lichfield specifications; colour; finish; cloth able to withstand strict laboratory tests; cloth conforming to the latest trend of fashion. Close liaison with the largest shirt manufacturers in America and England, aided by information from its London Office, keeps this Company abreast of overseas fashions.

The first stage in shirt-making is cutting. Materials are "laid up" on 80ft.-long tables and, from the library of style shapes, come the scientifically proportioned designs to plan the "lay" for cutting. Electrically driven machines cut approximately 700 thicknesses of material at a time.

In a Lichfield "Point-Setter" collar-attached shirt, there are 27 separate parts. These operations are carried out by expert cutters, some of whom have more than 20 years' experience with this Company.

An important feature of the Lichfield shirt is the collar and this work is undertaken by skilled operators. Here the special fusing interlining is stitched to the two outer pieces of the collar fabric. The whole is turned inside out by a machine and moulded to the correct shape, thereby ensuring perfect collar points. A special process fuses into one the original three thicknesses of the collar. Finally, collars are banded, buttoned, and button-holed.

Skilful hands and ingenious sewing machines, averaging 4,000 --6,000 stitches per minute, complete the hemming, rucking, ruffling, button-holing and sewing on of buttons.

Finally, after meticulous examination, the finished article—the Lichfield Shirt—is ready for despatch.

MACHINE CUTTING: Each shape is arranged so that no waste material occurs, thereby reducing the ultimate cost of the garment to the consumer. Electric cutting machines are operated by expert cutters. Once the machines have done their job, the cutters pare the various parts to exact shape with very sharp hand knives.

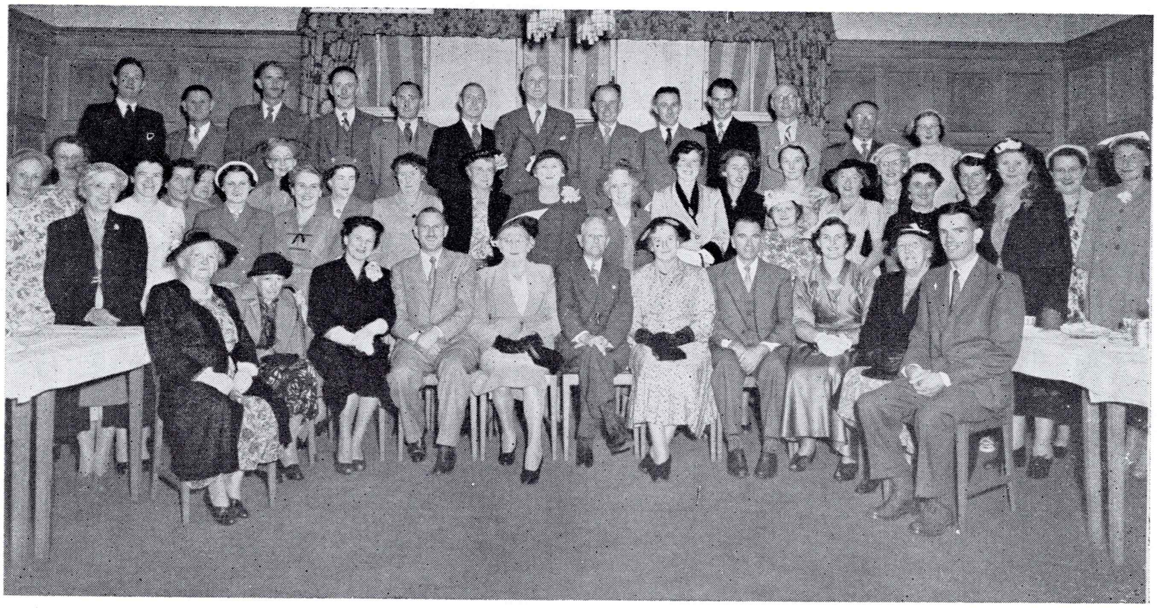
We feel confident . . .

The story does not end with the finished Lichfield product. Lichfield issues a warning — **Be sure that amateurs don't wreck your balance sheet!**

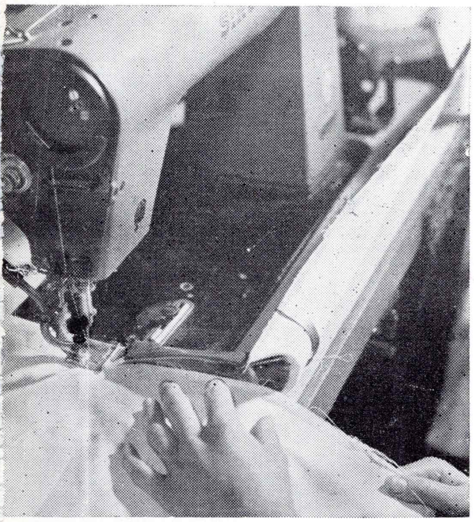
For this purpose, they have devised a Lichfield Top Retail Course where many of the foregoing aspects are highlighted to traveller, retailer and assistant alike. The Lichfield management takes on the role of consultants. They have substantial experience in appraising business functions and their relation to the eventual profit picture.

To such an appraisal, management counsel brings not only specialists trained in such knowledge and determination, but an uninvolved viewpoint that would be virtually unattainable if the problem had been kept within the precincts of the organisation. Those who attended these courses, by training and thorough question and answer, now have a new outlook on business.

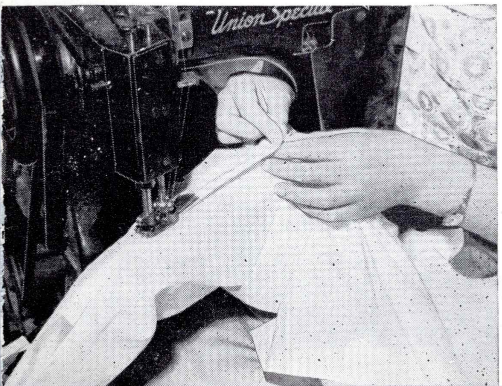
Friendly advice, financial and business problems are analysed. The organisation outlines its advertising policy, which conforms to a new and modern streamlined type: Advertising that makes itself seen and heard above the crowd; advertising that tries to make it easy for people to pick one brand out of many; advertising where the story can be absorbed at a glance; advertising that presents clarity, speed, conviction . . . . Conviction that, through continuous investigation, research and laboratory control, the Lichfield garment protects its quality name and standard, so that when your customer wears Lichfield two things happen — he enjoys wearing one of the finest garments of its kind, and has the pardonable satisfaction of knowing that others, too, unreservedly admire his choice !

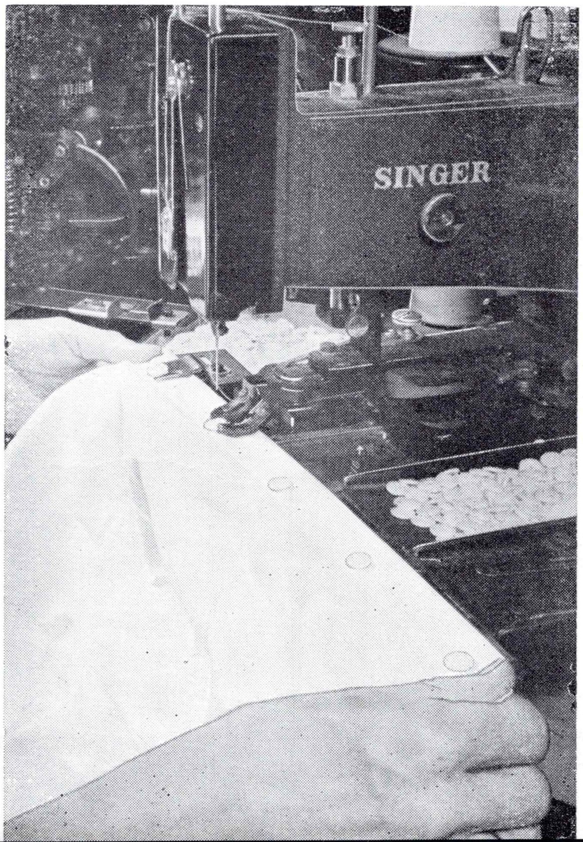


LONG SERVICE: Presentation to staff who have served 10, 20 and 30 years

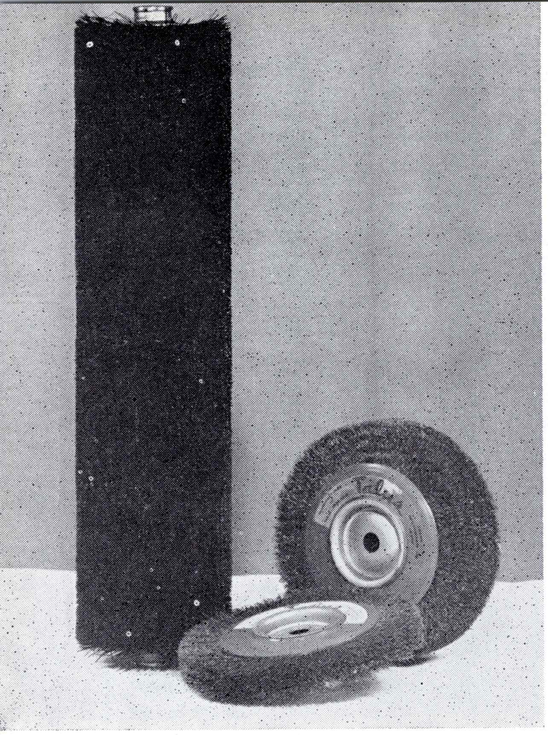


SEWING ON THE FRENCH FRONT STRIP. Note the Front Strip feeding into the folder. In one operation (below) it is accurately sewn onto the front body, using a single needle machine.



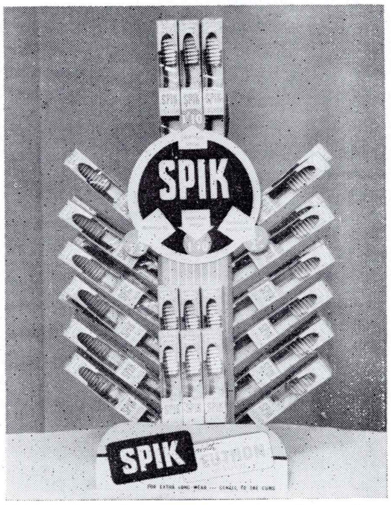


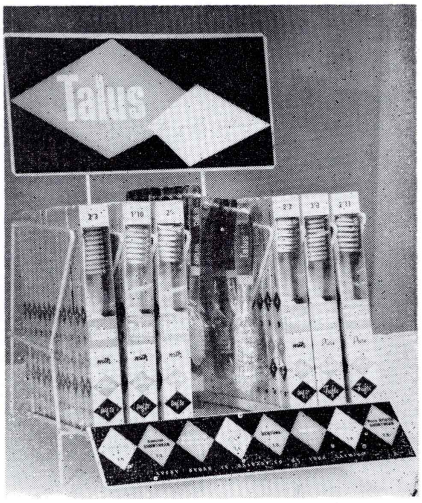
SEWING ON BUTTONS is a lightning, automatic operation. Here skilful hands adjust each securely sewn-on button in the twinkling of an eye.



An industry vital to New Zealand's economy

TALUS BRUSHWARE LIMITED





Corner Cambridge & Prouse Streets, Levin

Established in 1950 by Mr. W. L. Turley in conjunction with Messrs. M. G. Turley, H. Griffith and Salmond & Spraggon Ltd., the Company initially acquired small premises in Thorndon Quay, Wellington. The latest machinery made in Great Britain was installed to manufacture toothbrushes, dental plate brushes, nailbrushes and hairbrushes.

Much assistance was given the new Company by the late Mr. V. L. Palmer, previously Managing Director of Salmond & Spraggon Ltd., and Talus Brushware's first Chairman. In spite of many difficulties, the business steadily grew and, by 1953, it had expanded into the field of industrial brushware. By 1955, it became obvious that factory accommodation would soon become completely inadequate.

After abortive attempts to obtain new premises in Wellington, the Hutt Valley and even Wairarapa, the Company happily considered Levin, and has not been disappointed in its choice. For such an industry there was no great advantage in having port and other facilities which main centres could offer. In August, 1956, it moved into its new quarters of 7,600 sq. ft. at Levin. Provision has been made for future expansion by purchasing adjacent property.

Production in this modern factory, employing a staff of 20, and where, progressively, the very latest equipment has been installed, falls into three distinct categories. Conveniently, they may be classified under Toothbrushes, Dental Plate Brushes, Nailbrushes and Hairbrushes. These articles, bearing the trade names 'Spik' and 'Talus,' are distributed throughout New Zealand by Messrs. Salmond & Spraggon Ltd., Hope Gibbons Buildings, Wellington. Secondly, there are Vacuum Cleaner brushes and, lastly, Power-driven Rotary Wire brushes.

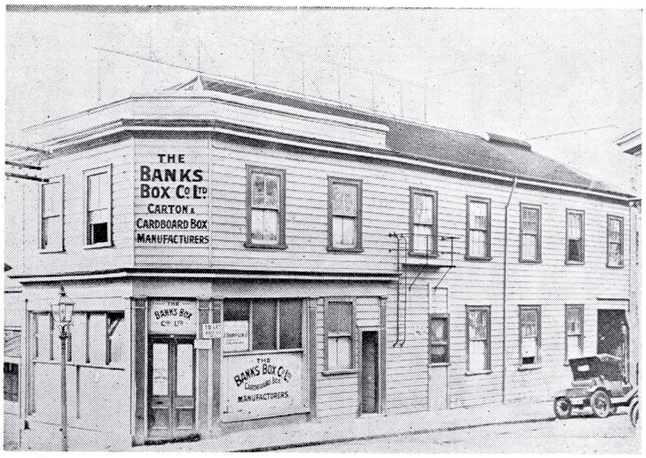
A continuous strip brush filling machine, the very latest and perhaps the only one of its kind within the Dominion, develops Vacuum Cleaner brushes and also special rotary and strip brushes for industry. The bristling materials essential for the fabrication of these items may be either hog bristle, fibres, horsetail hair or steel and brass wires.

Whereas previously power driven rotary wire brushes were imported, these are now made in this factory on equipment especially designed and made in the Company's toolroom. On performance tests these New Zealand-made 'Talus' brushes are more than comparable with the imported product.

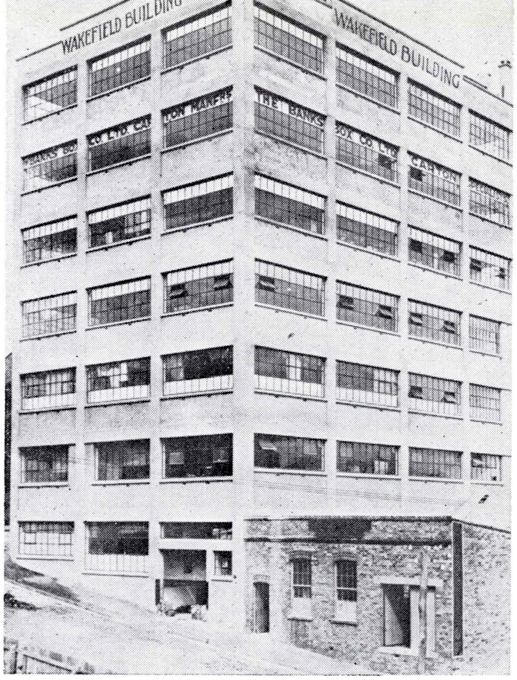
Present Board of Directors: I. R. Salmond (Chairman), W. L. Turley (Managing Director), G. W. Salmond, M. G. Turley, J. I. Cooke (Secretary). The Company's London buyers: Messrs W. A. Sparrow & Co. Ltd., 4/7 Chiswell Street, London.

FACTORY AND OFFICES OF TALUS BRUSHWARE LTD., at Levin, 59 miles north of Wellington.

SPIK TOOTHBRUSHES
TALUS BRUSHWARE LTD.


THE BANKS BOX Co Ltd CARTON & CARDBOARD BOX MANUFACTURERS
THE BANKS BOX Co LTD
THE BANKS BOX Co Ltd CARDBOARD BOX MANUFACTURERS

FIRST FACTORY 1912


WAKEFIELD BUILDING
WAKEFIELD BUILDING
THE BANKS BOX CO. LTD CARTON MANFRS

PREMISES 1924

THE BANKS BOX COMPANY LIMITED

Morningside
Auckland

AN AERIAL VIEW of The Banks Box Co. Ltd.'s plant covering 89,000 sq. ft. at Morningside, Auckland.

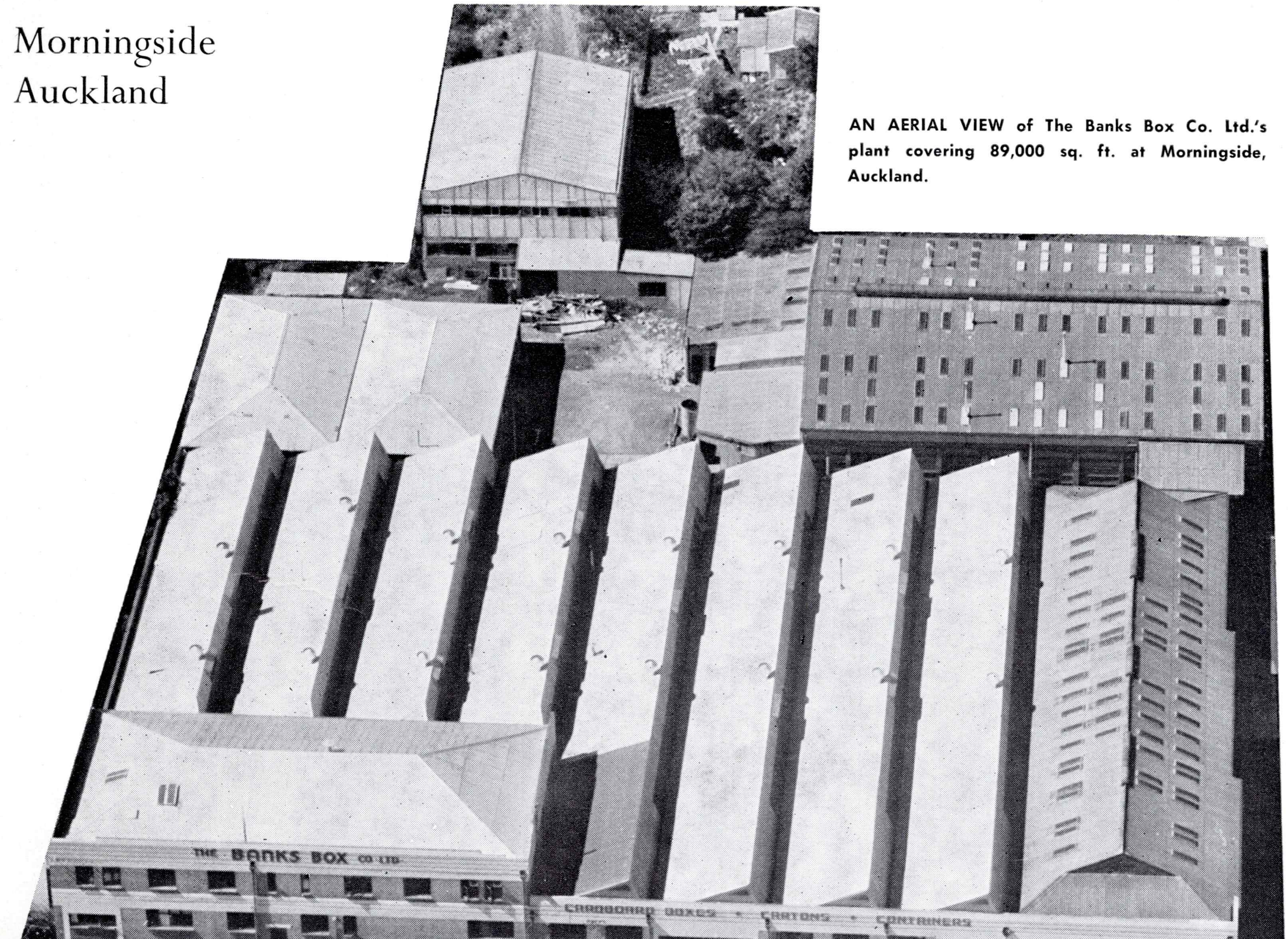

THE BANKS BOX CO LTD
CARDBOARD BOXES • CARTONS • CONTAINERS

Photo: Whites Aviation.

THE BANKS BOX CO. LTD.

The fortunes of the Packaging industry function as a barometer of general economic conditions

The vigorous growth of the Company for nearly 50 years has been consistent with its policy of keeping abreast of modern packaging processes and techniques. The Company was founded in Palmerston North, but its real establishment in a small building on the corner of Wakefield and St. Paul Streets, Auckland, dates back to May 17, 1912. Within a few years notwithstanding the fact that it was doubled in size, the building still proved to be inadequate. Consequently, in 1924, a seven storeyed premises, bounded by St. Paul and Lorne Streets, was erected to facilitate production and an ever increasing consumer demand.

The manufacture of packaging, however, necessitates quite a considerable amount of handling and fails to operate smoothly on different floor levels. This fact initiated a final move to its present location at 16 Taylors Road, Morningside, where numerous extensions have been made over the ensuing years, while still retaining all plant at ground floor level over most of the factory's 89,000 sq. ft. floor area. A reserve store of 22,000 sq. ft. has also been aquired at Glen Eden. One hundred and forty persons are employed in this industry and just recently one of the three original members on the staff retired after 46½ years' service.

100% New Zealand produced.

The monthly production of cartons runs into many millions, which are distributed throughout the country to over 2,000 customers in this highly competitive field.

Basically, the raw material used is cardboard, which is supplied from the Whakatane Board Mills and by N.Z. Forest Products Ltd. The use of imported board constitutes a negligible amount. In addition to ordinary board, the Company utilises a considerable quantity of corrugated board. This latter item is supplied by the A.C.I. Fibre Packages Pty. Ltd., which Company initially developed the production to meet its own packaging requirements.

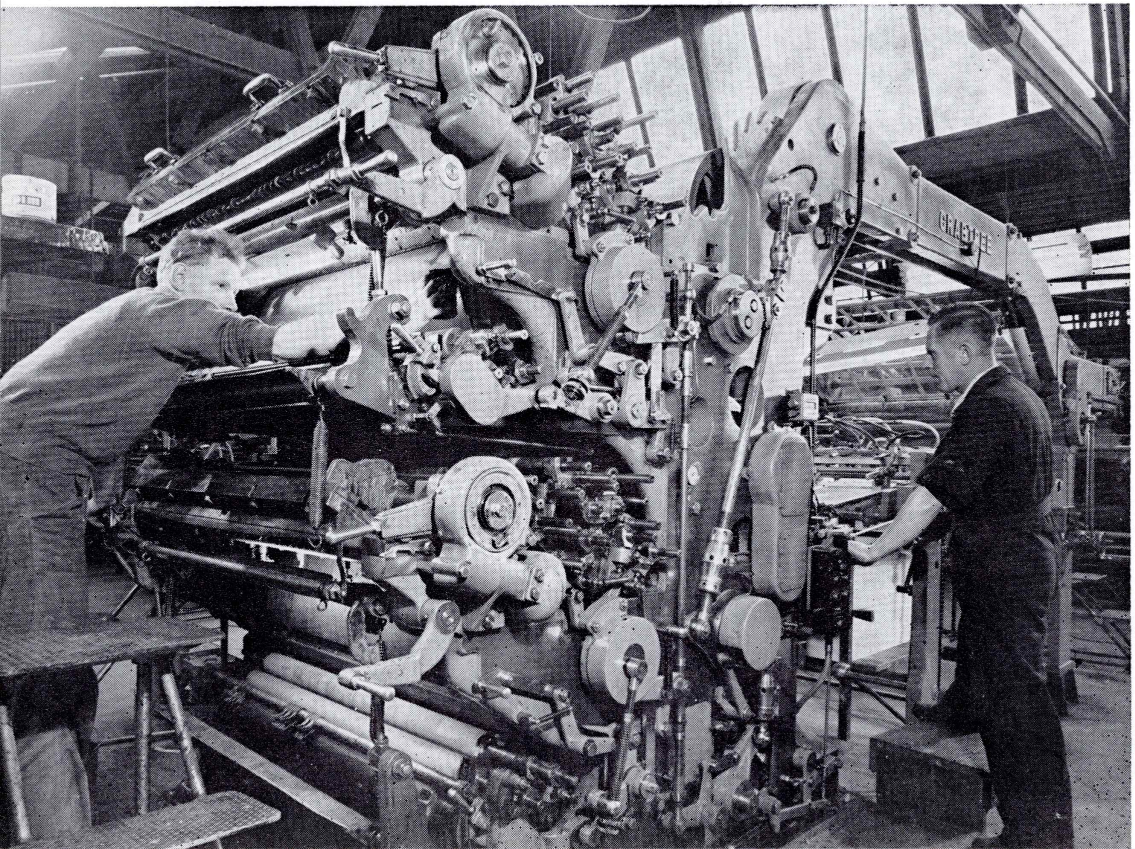
Covered by world patents.

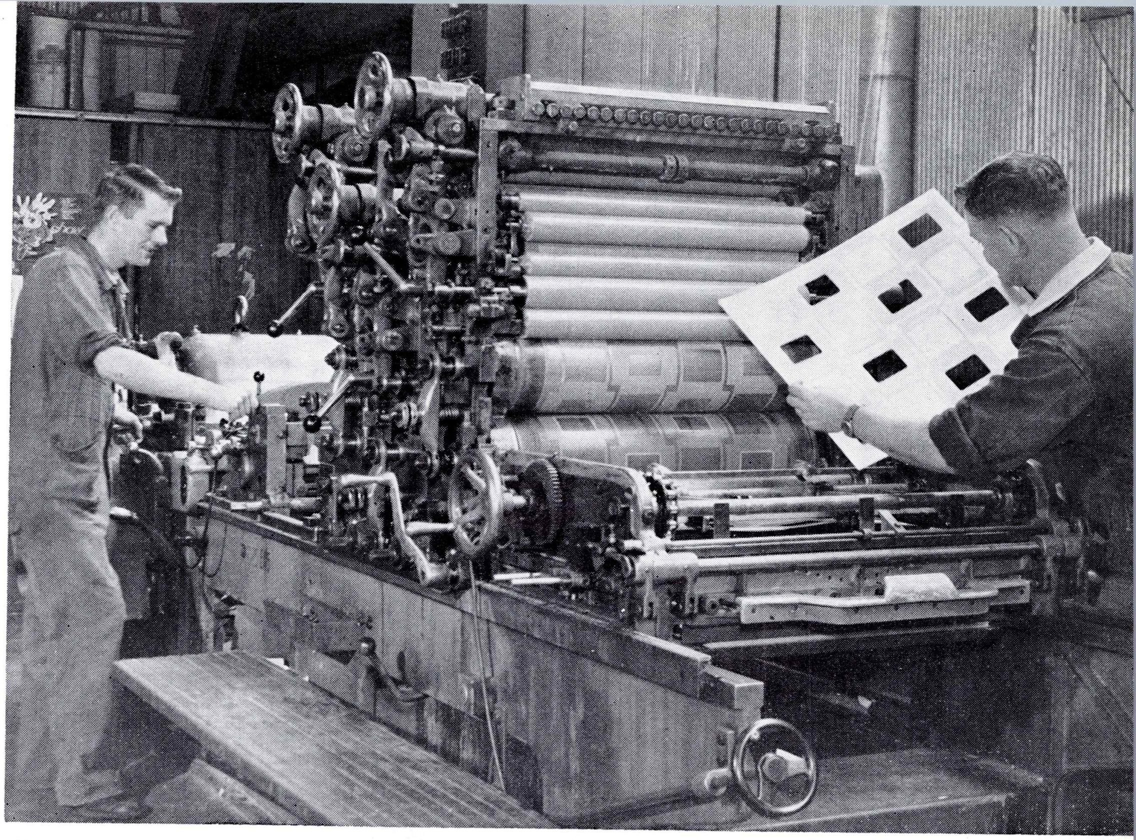
The progressiveness, versatility and outstanding reputation of The Banks Box Co. Ltd. has enabled it to proudly introduce and manufacture under licence in New Zealand, the most advanced form of packaging — the Hermetet Carton.

This modern packaging unit is essentially a cardboard carton with an integral liner that replaces the conventional 'bag-in-a-carton' and is of Swedish invention covered by world patents. It has acquired international acclaim and recognition as an ingenious method of packaging.

Unique features of the Hermetet Carton are: the inner liner is glued in as an integral part of the pack; it is non-collapsible under normal filling processes—thus a 'time-saver'; it avoids unnecessary space wastage, since the closure is part of the end seal, thereby eliminating the usual folded-over ends typical of the 'bag-in-box' unit; it is easily accessible and very simply closed, and the product remains moisture free and sift-proof indefinitely.

ONE OF THE COMPANY's Crabtree offset Lithographic Machines which is fully-automatic and prints in two colours in a single operation with a rated output of 3,600 impressions per hour.





THE THREE PROCESSES of printing, cutting and creasing, and stripping are performed in one operation on this special purpose machine. Cardboard is run off a reel instead of the usual procedure of feeding sheet cardboard. The machine simultaneously prints in three colours with a rated output of 6,000 impressions per hour.

Hermetet packs offer no end of potential, depending upon the types of liners used. Materials include, amongst others, polythene-coated paper, laminated foil, cellulose film, grease-proof and waxed papers, and the pack allows for the packaging of products such as powdered paints, cake mixes, cube sugar, frozen foods, powdered milk, washing compounds, etc.

Stringent tests have been undertaken with the Hermetet Carton and it has come through with flying colours. Significantly, during an experiment with fermenting liquids absolutely no seepage was apparent but rather the pressure built up eventually burst the carton. Likewise, by using the correct liner, ordinary liquids may be stored for several years without leakage resulting.

A hundred or a million.

The Banks Box is geared to execute orders of either a few odd hundred to millions of cartons. Complementary to production the Company offers a design service, which is an all important factor in the modern self-service store and "point of sales" promotion.

Special machines have been installed to cater for colossal production requirements. Plant includes giant, fully-automatic Crabtree offset lithographic machines, which print two colours in a single operation; coventional letterpress machines; and special purpose machines on which the three processes of printing, cutting and creasing, and stripping are amazingly performed in one operation, with a rated output of 6,000 impressions per hour. From these production lines, Hermetet Cartons and packs of all descriptions roll off to become eventually a familiar sight in the households of New Zealand.

Last, but not least, the Company offers a service in the interest of the manufacturer who requires a package for his product. For this purpose films are available to show the versatility and value of Hermetet packaging used, in conjunction with either the fully-automatic Hermic X filling and sealing machine which has a capacity of 40-58 cartons a minute, or the semi-automatic model (Hermic 2) for average applications.

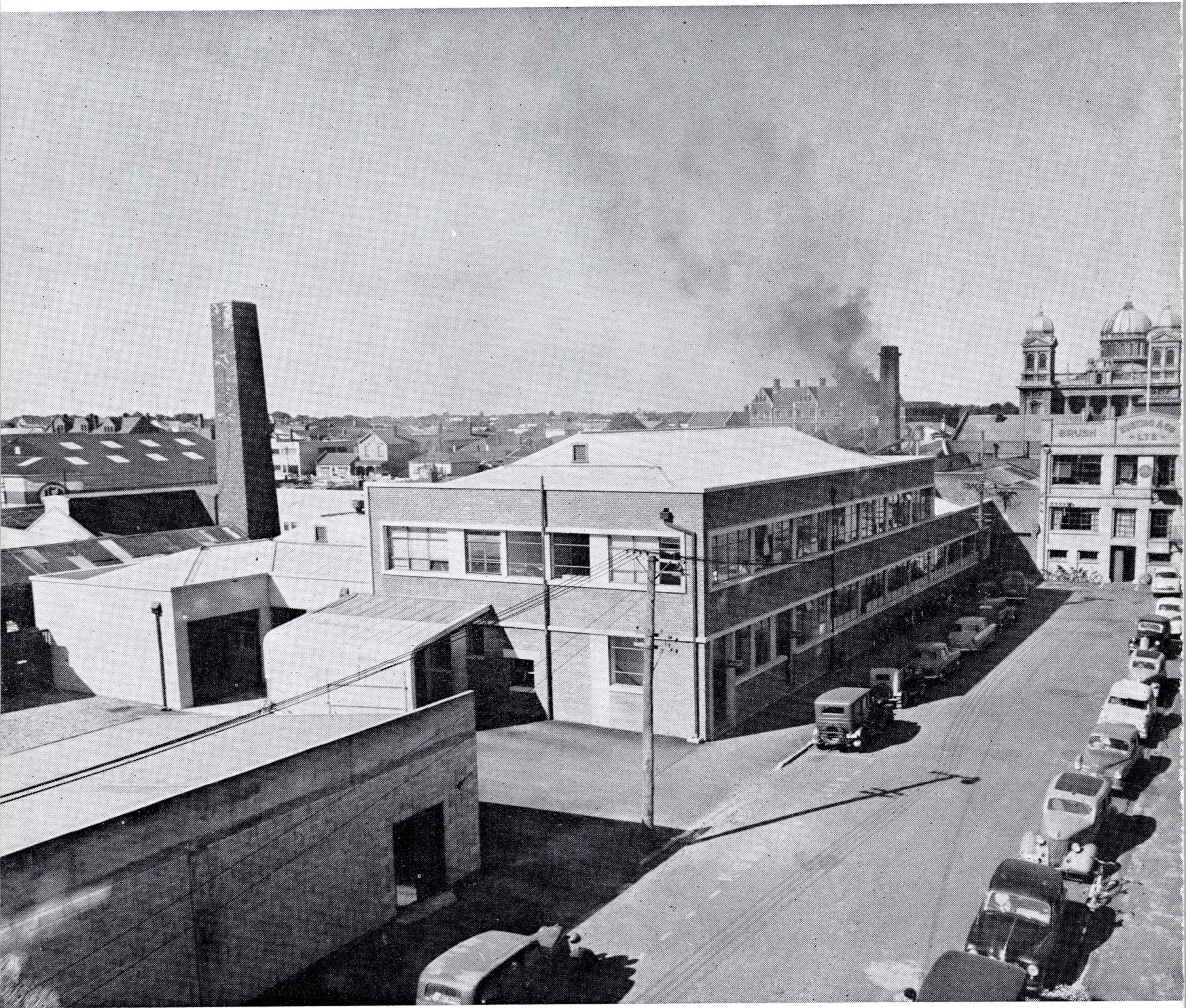
As creators of a thousand and one different types of unit packaging efficiently, economically and dependably during 47 years of manufacture, The Banks Box Co. Ltd. has always stressed quality construction and service as its guarantee of satisfaction. It has religiously stuck to the policy of being constantly watchful and alert to new trends, techniques and development in packaging which may materially affect sales promotion and merchandising in general.

Directors: C. G. Lennard, Chairman; N. Burnett, Deputy Chairman; M. A. Brook; R. N. Gow; W. S. Leach; J. A. Tunnicliffe, General Manager. Secretary, R. E. E. Beguely; Sales Manager, A. K. Farquharson; Works Manager, R. G. Smith.

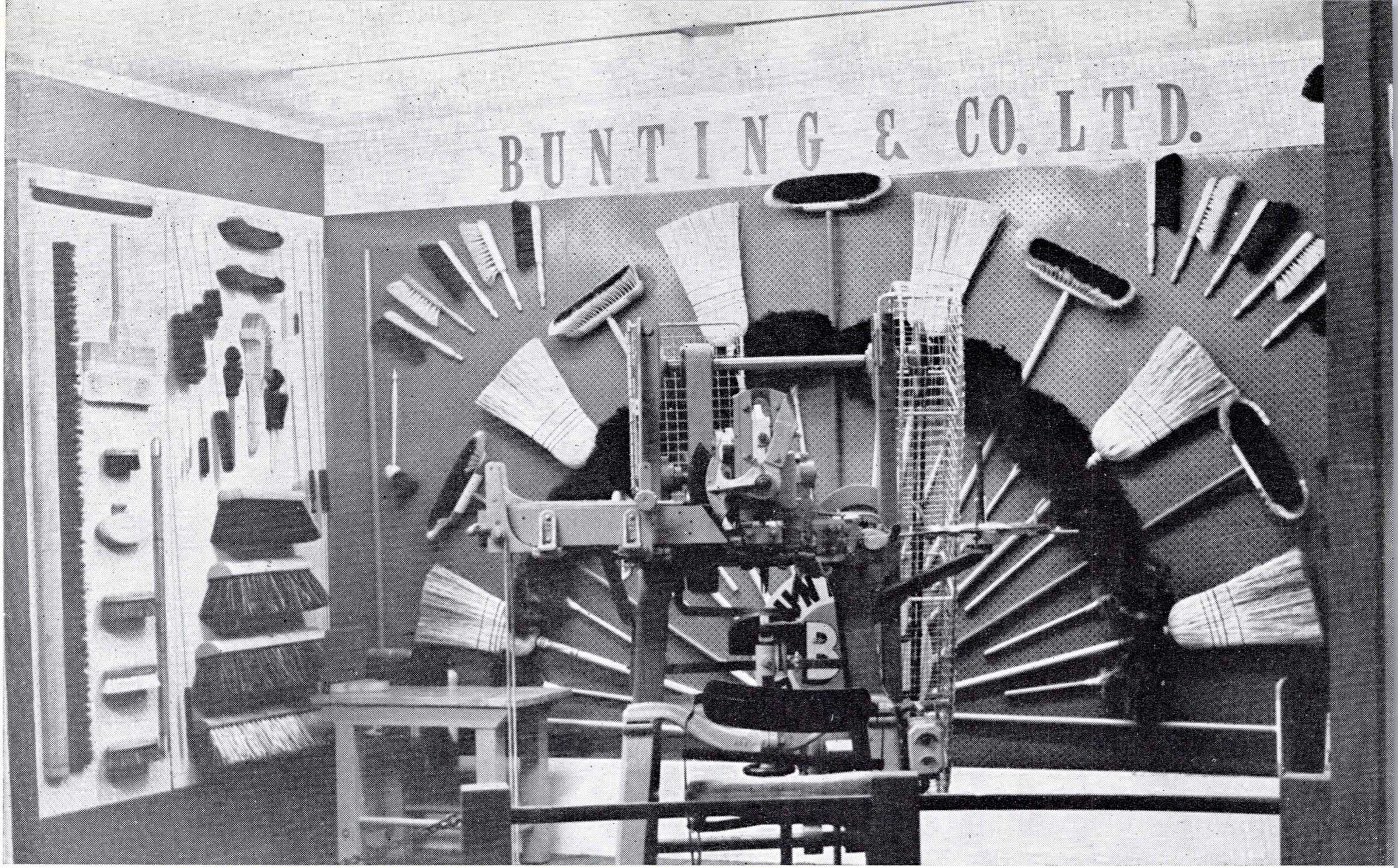
A long established business house with a high reputation for the quality of its products

BUNTING & COMPANY LTD

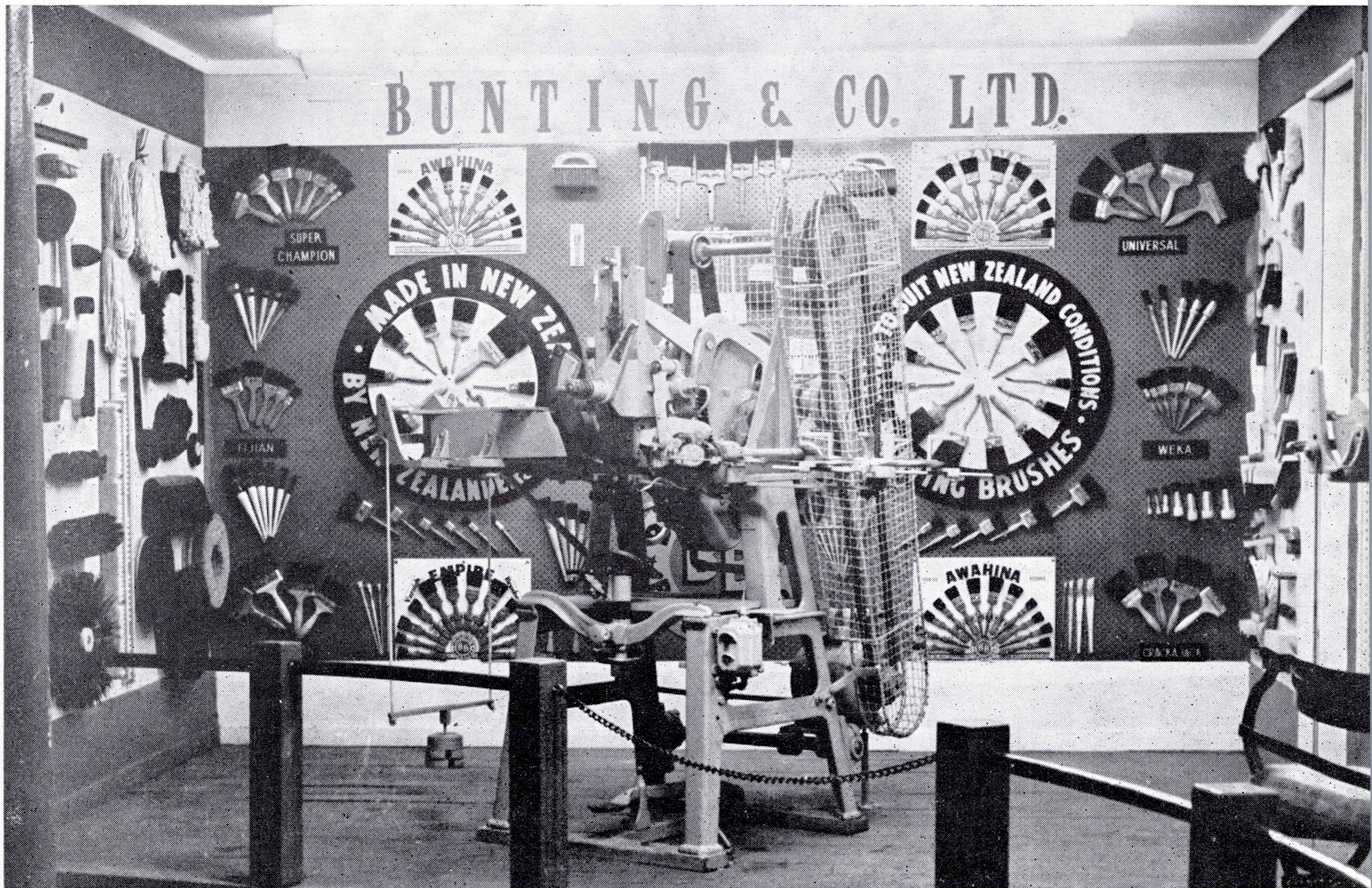
Fife Street, Christchurch



AN AERIAL VIEW of Bunting's new office and warehouse block, with main factory block at the end of the street.

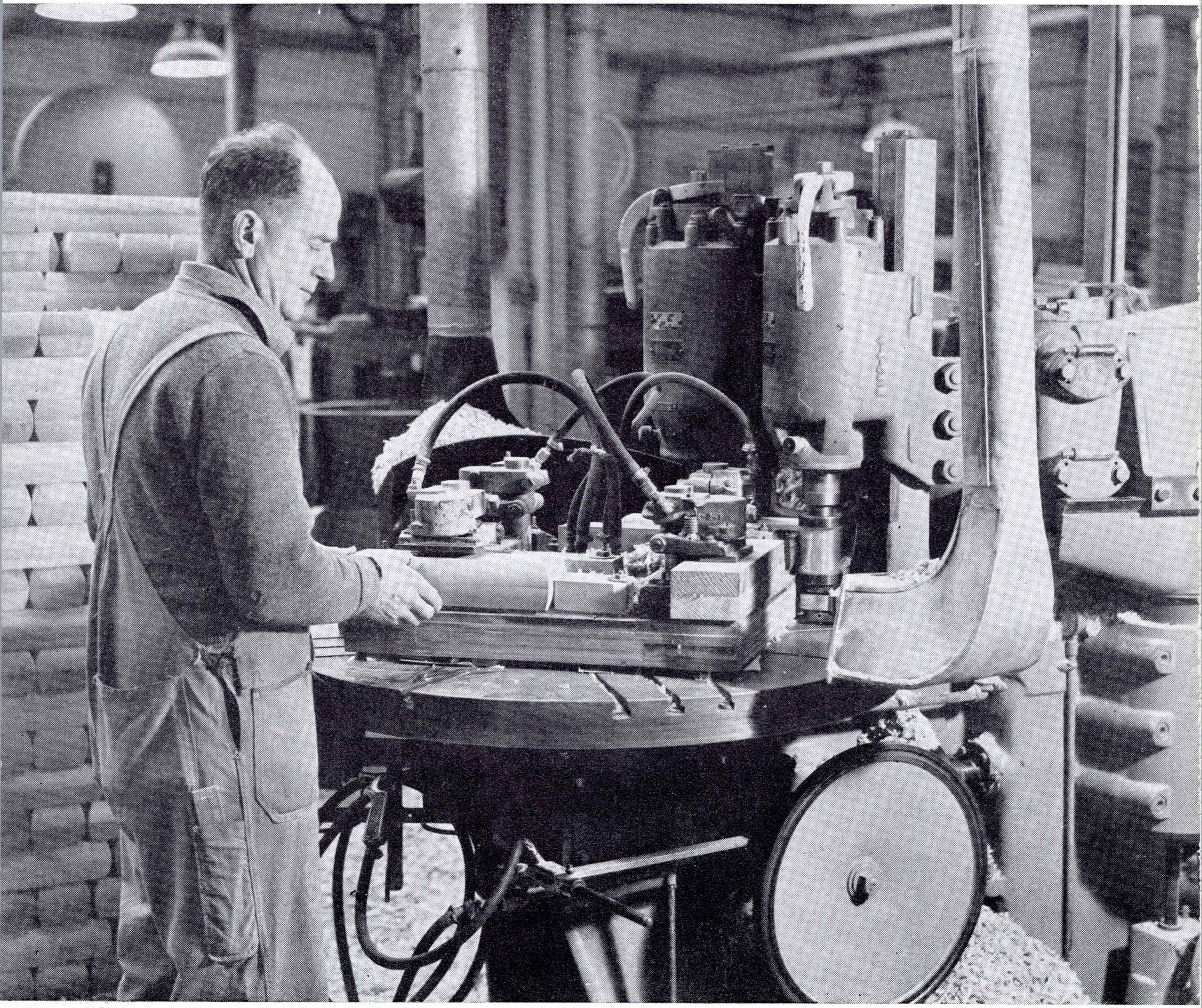

BUNTING & CO. LTD.

SHOW BRUSH MACHINE (above) and brushware products as displayed at a recent Industries Fair at Christchurch.


BUNTING & CO. LTD.
AWAHINA
SUPER CHAMPION
MADE IN NEW ZEA
BY NEW ZEALANDE
TO SUIT NEW ZEALAND CONDITIONS
ING BRUSHES
UNIVERSAL
FIJIAN
WEKA
EMPIRE
AWAHINA

There is an air of solidity about The House of Buntings. Its foundations are deep-rooted in the commerce of the Dominion. As Christchurch and other key cities of the Dominion have grown, so has the House of Buntings. A 'house' rather than a firm, the history of Buntings is closely allied with the lives of several men, notably those of its founder, Mr. Thomas Bunting, and his close friend and business associate of half-a-century, Mr. Isaac Woolf. Both were men of vision and high integrity, and laid the foundations of happy employment and a contented staff, a fact of which the firm is justly proud.

One has to go back to the 1870's for the beginnings of the firm of Bunting and Company Ltd. As far back as 1875, Mr. James Miller left his home in Aberdeen to seek his fortune in New Zealand. He was a brushmaker by trade, and, after spending a couple of years evaluating prospects and earning his living at manual work, he erected a small shed at the end of his section in Christchurch South and turned again to his old trade. Thus was born the now flourishing concern of Bunting and Company Ltd., with its scores of employees and with trade ramifications



A WOOD SHAPING MACHINE, as used in the Woodworking Department of Bunting & Co. Ltd. This machine is one of many used for shaping the handles of brushware products.

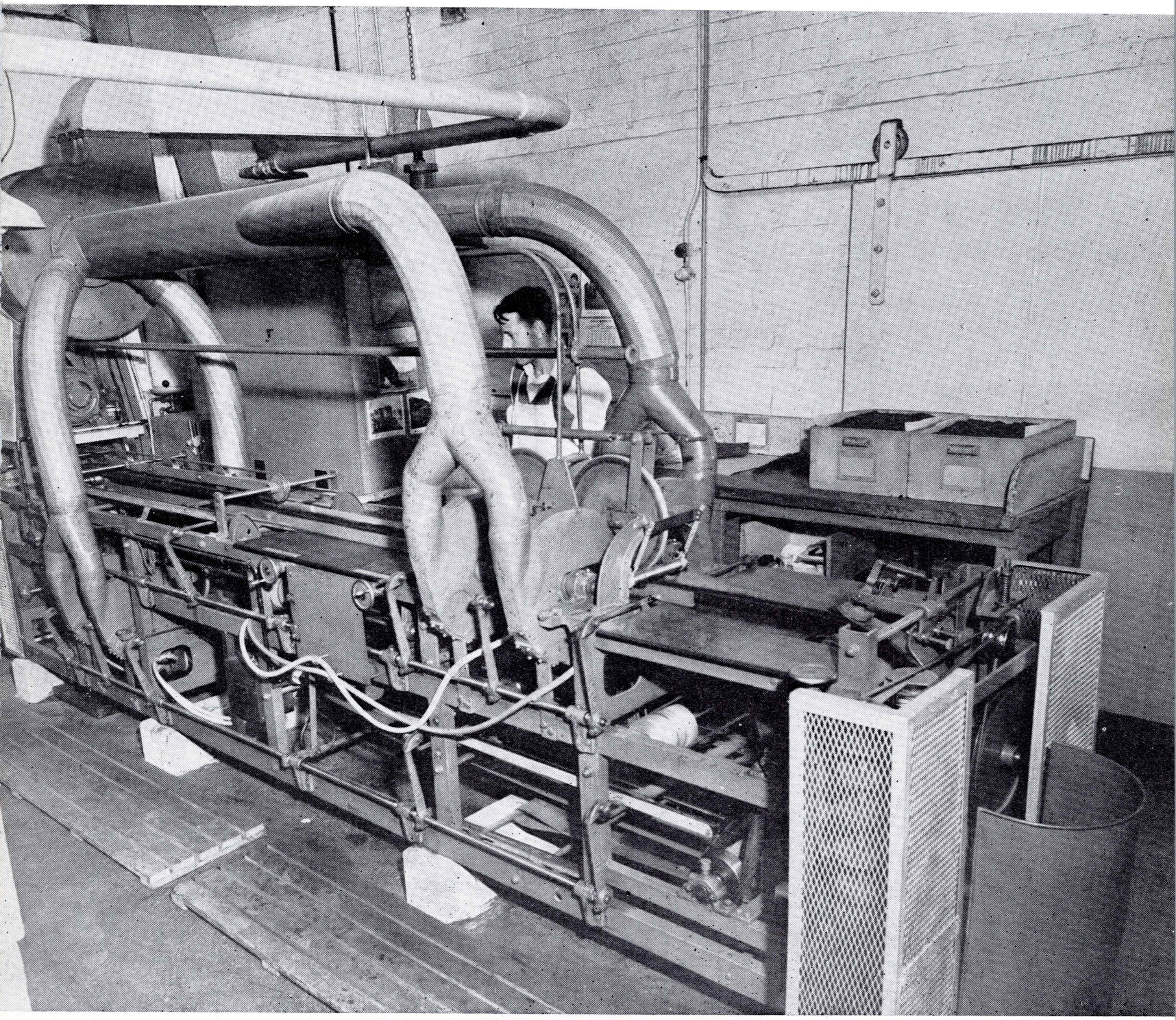
reaching from the Bluff to North Cape. It was in 1879 that Mr. Miller sold his first brushes.

In 1884, Mr. Percy Nind Ward, who was in business as a wholesale crockery and fancy goods merchant, seeking to extend his business, bought out Mr. Miller but engaged him to act as foreman of the factory.

Mr. Woolf joined Mr. Ward in 1885, and, when Mr. Bunting, in 1895, bought out the brushware business from Mr. Ward, Mr. Woolf elected to join him. By close application to business and the employment of the latest machinery, the proprietors built up a Dominion-wide business from very small beginnings.

Both Messrs. Bunting and Woolf made numerous trips to America, England and the Continent in search of new ideas and the latest machinery. This policy of going abroad to keep abreast of the times is followed by present day members of the executive.

Today, the Company employs a staff of just over 200 employees, many of whom have spent a great part of their working life with the Company.



A MODERN TYPE OF MIXING MACHINE, used by manufacturers for mixing various types of fibres and hairs.

Photos: P. F. Ford.

A TECHNICIAN completing the investing process, which is part of the cycle in the manufacture of the thermo-plastic moulds.

N.Z. manufacturer produces previously

BRITISH HEARING

Complete hearing aids have been manufactured by British Hearing Aids (NZ) Ltd. since its establishment in 1935. Never has this Company just merely assembled its product, but has set itself to develop and provide the greatest range of complete, quality hearing aids in the world.

To date, 22 models including those for men, women, children and babies, provide completely for all power-sensitivity, tonal and economy needs, from first stage hearing loss to profound deafness. Units, some as small as a postage stamp and others weighing as little as ½ an ounce, are manufactured in 'Universal's' Auckland factory. Special purpose tools of the Company's own design and making have made processing and production of these components possible.

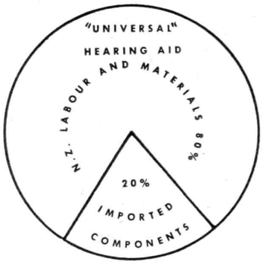
The advent of the transistor has resulted in the scaling-down of hearing aids. Reduction in size of all other components has followed. British Hearing Aids' technicians developed a proficiency to meet the demands of miniaturisation. Tiny transformers and inductive telephone listening coils of exceedingly fine wire are wound on special machines.

Electrical and mechanical components, resembling the parts of a watch, are developed on lathes and machines devised and constructed by them.

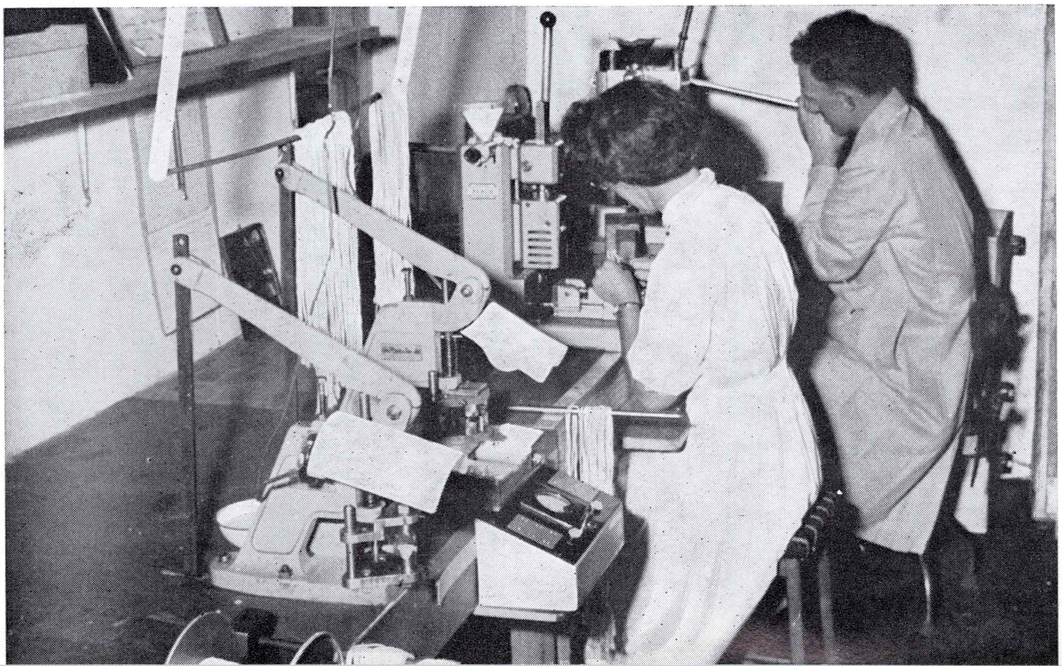
This Company originated the now accepted practice of processing an individual ear mould. Since ear impressions vary greatly, a single mould is cast for every aid user.

Productive capacity of this Company is sufficient to meet the requirements of New Zealand and the 'Universal' Hearing Aid, marketed without tariff protection, compares most favourably in quality and price with the imported article. For the past eight years, exports have been undertaken to Australia and Canada. "British Hearing Aid" offices are to be found throughout the Commonwealth.

Currently, the percentage value of imported electronic components used is as low as 20% of the total manufacturing cost. This figure is steadily being reduced through constant manufacture of further integral parts as new techniques and processes are evolved, resulting thereby in a saving of overseas exchange.

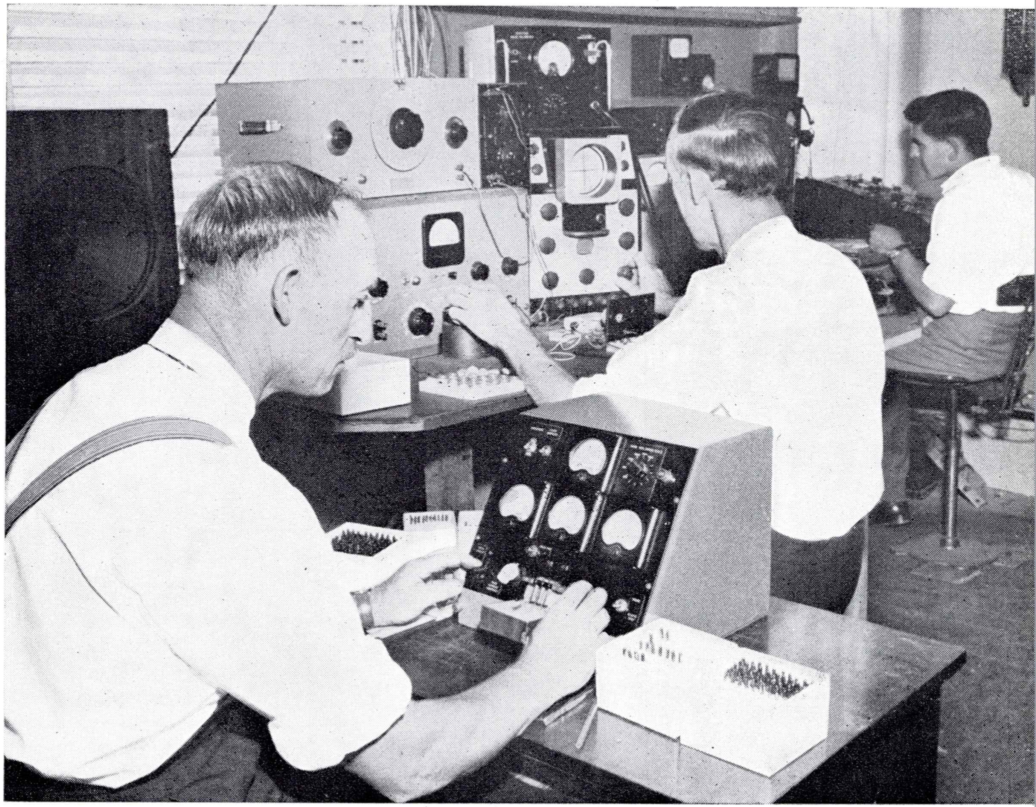


FANTASTICALLY SMALL PLASTIC COMPONENTS: The small injection moulding machines shown here are used in the manufacture of hearing aid cords and the many plastic parts required in the production of 'Universal' hearing aids. Special intricate small dies have been designed and built in British Hearing Aids (NZ) Ltd's own toolroom, to produce the ultra miniature parts so necessary in the modern hearing aid.



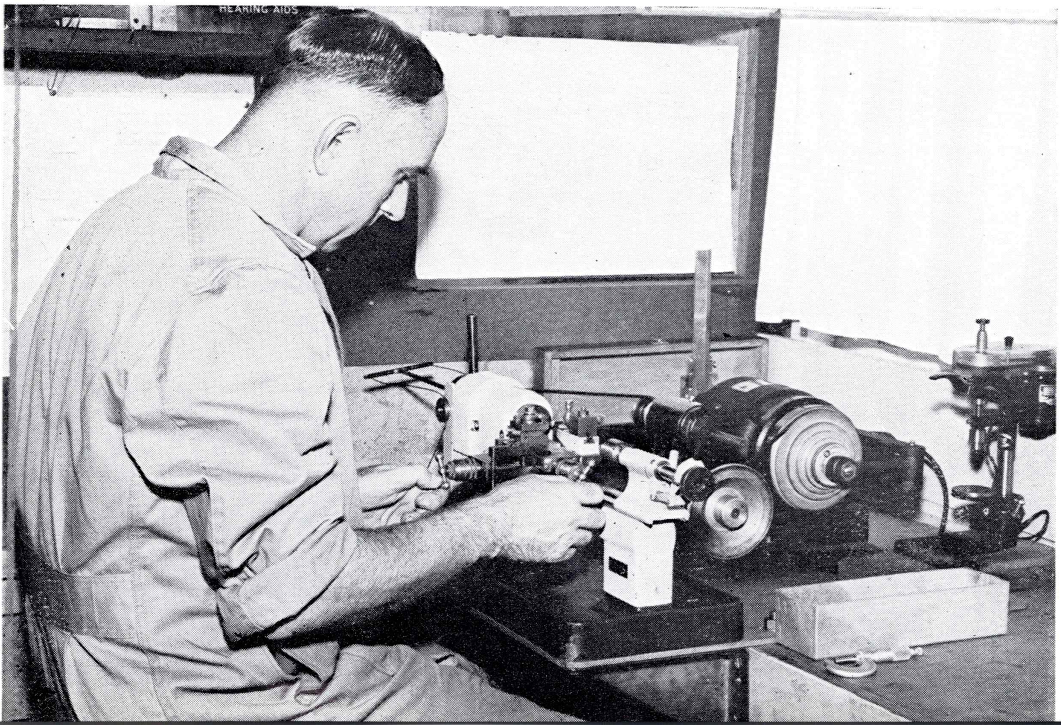
imported specialised product . . .

AIDS (N.Z.) LTD. 171 Queen Street, Auckland
Factory and Laboratory: 41 O'Neill Street, Ponsonby, Auckland



ELECTRO-ACOUSTICAL PRE-TESTING: This extensive range of electronic equipment is used in the pre-testing of all components used in 'Universal' hearing aids. Facilities for testing transistors, miniature earphones, microphones, condensers and transformers are depicted in this picture.

Precision engineering combines with Modern Electronic and Acoustic Techniques.

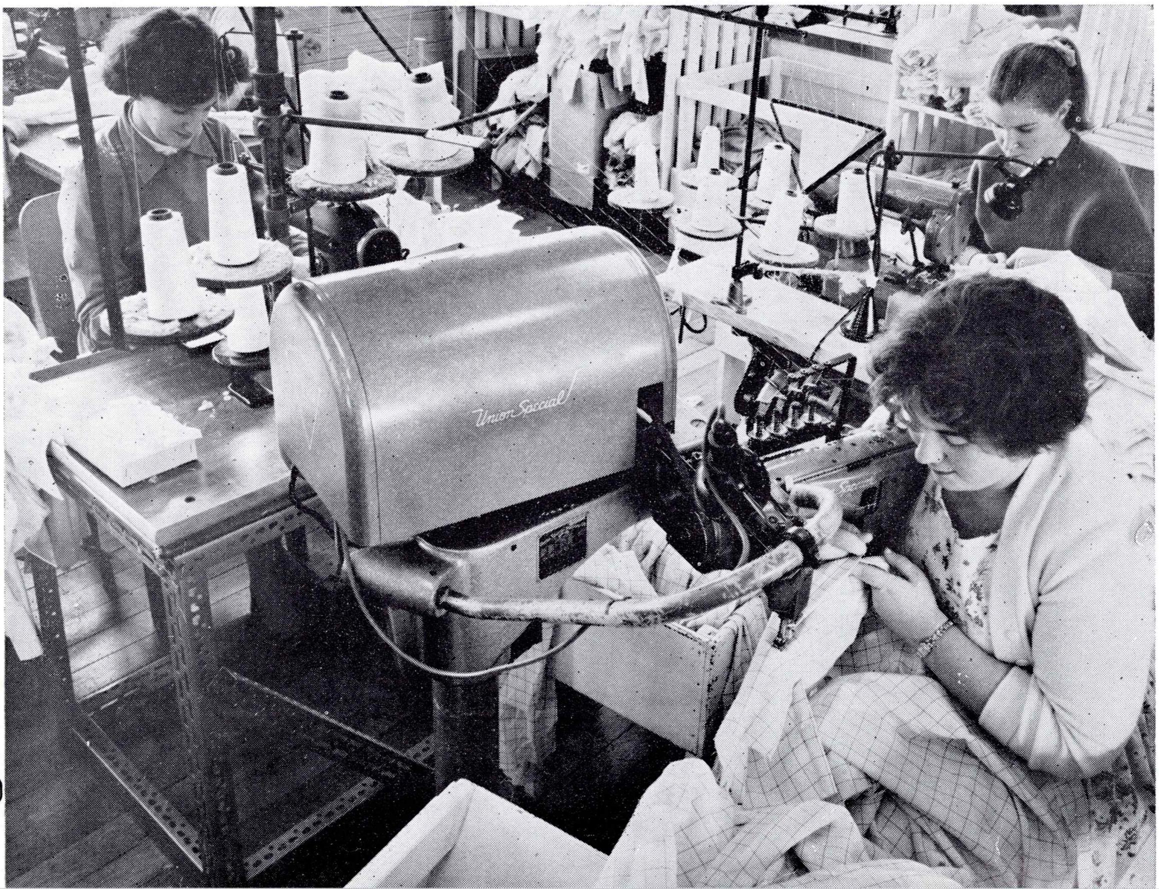


ACCURACY TO WATCH-MAKERS' TOLERANCES: The ultra miniature machine work employed is apparent from this photograph. The lathe shown is one of the smallest production units in existence. Special attachments and techniques have been designed by British Hearing Aids (NZ) Ltd. to enable these machines to reach a high production potential.

SKILLED FEMALE OPERATORS at work in the modern factory at Glen Eden, in Auckland's western suburbs.

UNION SPECIAL "SAFETY STITCH" MACHINE, capable of an operating speed of 4,500 stitches per minute. Machinist (foreground) seams the shirt from cuff to underarm in one operation, other operators (background) attaching collars, etc.

Photos: Rod Harvey.



A Company which has always set a standard for quality

AMBLER & CO LTD

Head Office & Factory: Auckland

Factories: Valley Road, Glen Eden
Anzac Road, Brown's Bay

Clothing manufacture is one of the principal basic industries in the Dominion's economy, and it is significant that of the many firms Ambler & Co. Ltd., now celebrating its 40th anniversary, should have perhaps made one of the most striking contributions towards the build-up and development of this efficient and progressive industry.

Mr. F. N. Ambler served in the New Zealand Forces during World War 1, and on his return to civilian life set out to manufacture women's blouses and men's shirts. Premises in Albert Street, Auckland, were rented and, with a staff of six girls, production was commenced on the 9th May, 1919.

In those days, men's shirts were a standard white and were worn with linen collars that were bought separately. In the first few months of operations, Mr. Ambler imported coloured ground shirtings, which proved an immediate success — so much so, that blouse production was dropped and the firm went on to specialise in men's garments only. It is interesting to note that during this period, white ground striped shirtings were very popular. They went out of fashion — today, they are back in favour again as the latest style.

Progress was highlighted with the introduction of collar-attached shirts which, in the early days, were hard to sell; today, they are almost in universal use. Currently, a complete range of men's shirts and pyjamas is tailored and distributed under the trade-name "Summit." These lines are backed by the Company's slogan, "No-one ever regretted buying quality."

Indicative of the quality and workmanship that goes into Summit products is the fact that Ambler & Co. Ltd. holds exclusive rights in the Dominion for some of the world's finest shirtings. From the Cellular Clothing Co. Ltd., England, comes Aertex; from William Hollins & Co. Ltd., Viyella and Clydella; from Hogg & Mitchell Ltd., Old England fabrics; all are made under licence. Other world names are Wemco and Tobralco and Stoffels of Switzerland, who make the fine quality "Dacron Plus." The Company also manufactures under licence Canada's finest shirt "Forsyth of Canada." There is constant exchange of technical information with Hathaways of U.S.A. The Company also has access to sources of technical information in Australia and Ireland, and is therefore, in the forefront with the latest developments in manufacturing technique.

With the growing awareness of fashion in men's wear, Summit has become a recognised style leader. Top executives of the Company constantly undertake trips overseas to seek out the best styles of America and the Continent.

The output of top ranking, quality fashioned garments keeps three factories operating on a full-time schedule. The factory in Wellesley Street produces men's day shirts; that at Glen Eden, sports shirts; at Brown's Bay, the complete output of pyjamas. A staff of 300 is employed, and, worthy of note, is the fact that two of the original six girls still work for the Company — indeed a remarkable indication of pleasant staff management relations over the years.

The collar is the most important and the most demanding feature in shirt manufacturing. Summit collars always fit. Machines have, consequently, been developed that will do a perfect job at a greatly increased production capacity, a factor which could never be achieved by manual operations.

The Ambler organisation's policy has been a constant striving towards the installation of the most reliable and "up-to-the-minute" machines procurable, 90 per cent of them being less than three years old. Batteries of these, operated by skilled machinists, fill their factories. Output is, therefore, facilitated with the end purpose the production of a garment of outstanding design — one which has been meticulously inspected and is perfect in every detail.

SUMMIT BUILDINGS
SHIRTS
SUMMIT BRAND
PYJAMAS
AMBLER & CO LTD

THE HEAD OFFICE AND FACTORY, Wellesley St., West, Auckland.

As many as 50 operations in the case of day shirts, and 40 in the case of sports shirts, are undertaken to produce the finished article. Special single-purpose machines perform this work smoothly and efficiently. Machines range from high-speed plain sewers to air-operated collar point trimmers. Special "safety stitch" three-needle machines, fed by six cones of cotton, are used in the production of no-iron shirts.

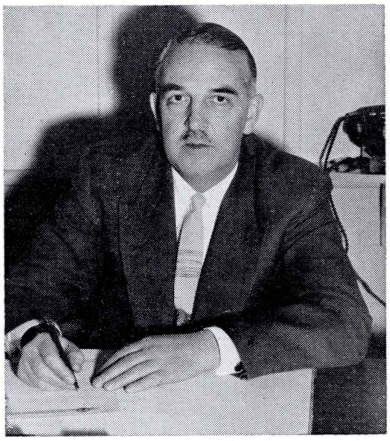
Yokes are attached to shirts by means of a special machine attachment and a sliding table, which make possible the stitching of over 100 dozen garments per day. Pockets are turned and creased on an automatic, electrically-controlled unit, as well.

Operators using "Walking Foot" machines, which make for greater control and accuracy — just one single stitch in the wrong position would result in a reject — turn out "Summit Collars." These are eventually screened and inspected over an x-ray panel, to ensure perfection and that no loose threads are left in the collar before it is attached to the shirt.

Finally, before the packaging stage, which is done on an ingenious unit, fully automatic American shirt presses, at the flick of a button start a cycle which ends with the complete pressing and finishing of the Summit Shirt.

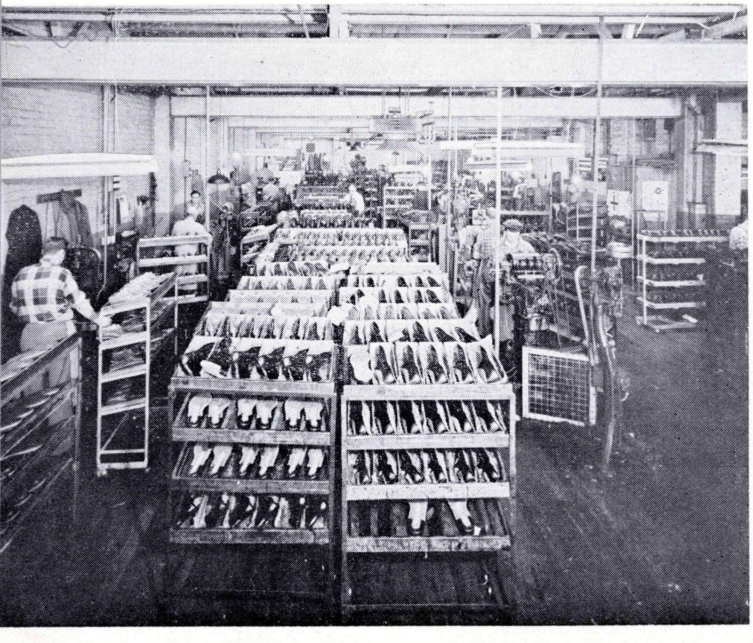
Company executives: F. N. Ambler, O.B.E., J.P. (Chm. of the Board); N. G. Ambler (Mgr. Director); S. Leathem, M.A., B. Com., A.R.A.N.Z. (Director & Secretary); W. D. Barclay, F.P.A.N.Z. (Director); D. W. Watson, A.R.A.N.Z. (Accountant); F. Richardson (Supt. of Factories).

O'B
M. O'BRIEN & CO. LTD.
O'B
FOOTWEAR



M. F. O'BRIEN,
Managing Director since 1945.

A PORTION of the Making Department at 31 Dundas Street, Christchurch.



Manufacturers of

M. O'BRIEN

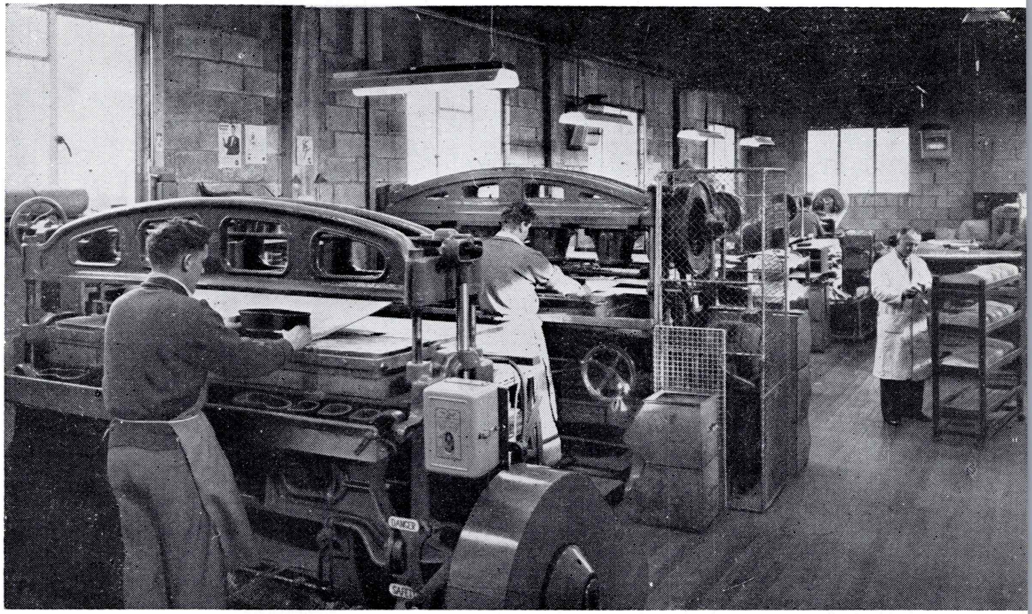
31 Dundas

In 1843, the founder of this firm, Michael O'Brien, was born in Ennis, County Clare, Ireland. During his young days there occurred the great famine, when over 2,000,000 people died of starvation and pestilence within two years. Realizing that the effects of this disaster would be felt in Ireland for many years, his parents agreed to his apprenticeship to a naval bootmaker at the Chatham Dockyards in England. After completing his contract he decided to sail for Australia, but he only spent a short time in Melbourne and went on to the West Coast of New Zealand, attracted there by the gold fever which was bringing thousands of immigrants to the colony.

Like many others, Michael O'Brien failed to make his fortune, so he decided to capitalise on his knowledge of bootmaking. He began making and repairing boots on the goldfields and, in 1866 at the age of 23, he set up in business in Mawhera Quay, Greymouth. During the next 18 years his enterprise was rewarded and, in addition to building up a profitable manufacturing and retailing business, he obtained many good agencies and, in fact, imported the first sewing machines to the West Coast. Later, he was one of the first importers of gumboots, rubber heels and bicycles — rather a strange contrast!

In 1884, he moved to Christchurch and set up a factory in St. Asaph Street, which, by 1893, proved to be not large enough for the growing business. He then purchased the Colosseum, formerly a skating rink and since demolished to make way for New Regent Street. Michael O'Brien's final move came in 1901, when he built a factory in Dundas Street and this building is still the home of the Company. After his death in 1909, the business was carried on by his three sons and was formed into a limited liability company. One of his sons, Frank O'Brien, was appointed general manager in 1916 and after he died a few years later, Mr. J. W. Green succeeded him.

On Mr. Green's retirement in 1935, Arthur O'Brien, a son of the late Frank O'Brien, was appointed manager. The business was reorganised and brought up to date and production was increased substantially. After a short illness, Arthur O'Brien passed away in 1944, and in the following year Michael O'Brien, a son of Dr. A. B. O'Brien (then Chairman



THE SOLE-CUTTING DEPARTMENT, 117 Durham Street, Christchurch.

men's footwear for 93 years

& COMPANY LTD

St. Christchurch

of Directors), was appointed general manager, and Frank O'Brien, another son of the late Frank O'Brien, was made assistant manager. Since then, the Company has made further outstanding progress and factory output has been more than doubled. It is interesting to note that, except for one period of 15 years, the firm of M. O'Brien and Co. Ltd. has been managed by a member of the family throughout its existence.

Michael O'Brien started by manufacturing the famous "O'B" Work Boots in 1866, but during the years the Company has also established a great reputation for its Football Boots. For 40 years, these boots have been favourites and today the annual production exceeds 36,000 pairs. O'Briens are the leading manufacturers of Safety Footwear (boots and shoes with steel toe reinforcement) which are rapidly proving their worth in industry. The Company also manufactures a wide range of men's shoes, as well as many types of sports footwear.

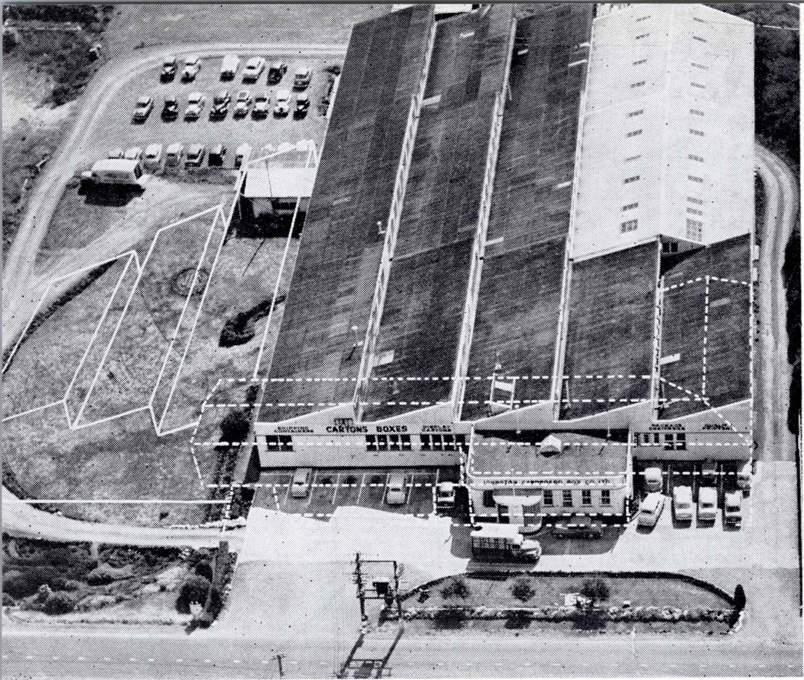
The pioneering spirit of the founder has been carried on successfully and today the Company is one of New Zealand's largest and best-known footwear manufacturers. Only recently, a new factory has been set up to manufacture the revolution- "Paraflex" vulcanised footwear under licence to Ro-Search Inc., North Carolina, U.S.A. In addition, O'Briens have completed negotiations to produce in New Zealand a range of casual footwear under licence to the well known firm of L. B. Evans, of Massachusetts, U.S.A.

During 93 years, O'Brien's have built up a reputation for honesty and quality, and their well known "O'B" brand is always associated with the best in work-boots, football boots, sports footwear and shoes of many types. With the addition of "Paraflex" and "Evans," O'Brien's will forge ahead as leaders in the field of good footwear for men and boys. M. O'Brien & Co. Ltd. now owns six acres of land close to the centre of Christchurch and plans to erect a footwear factory which will be one of the largest and most modern in New Zealand. The firm intends to continue its policy of expansion and continual modernisation so that it will be able to supply the people of this country with footwear of a standard comparable with that obtainable anywhere in the world.

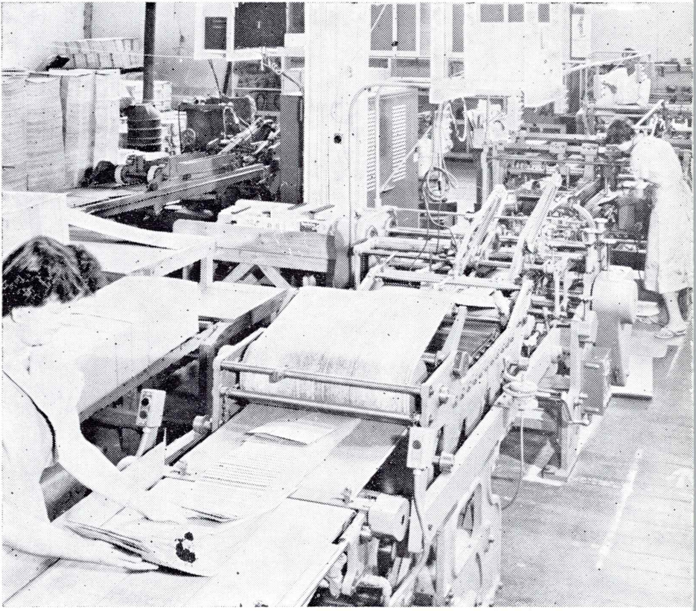
THE NEW FACTORY at 36 Dundas Street, where "Paraflex" vulcanised footwear is manufactured under licence to Ro-Search Inc., U.S.A.

A Revolution
caused by . . .
PACKAGING

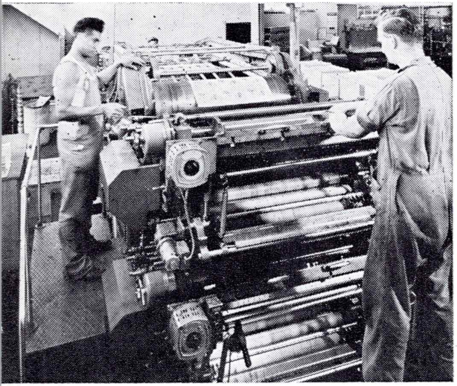
THE JOHNSTON



HEAD OFFICE AND PENROSE FACTORY. Factory extension (outlined) has been completed and modern new offices (dotted lines) are at present under construction.

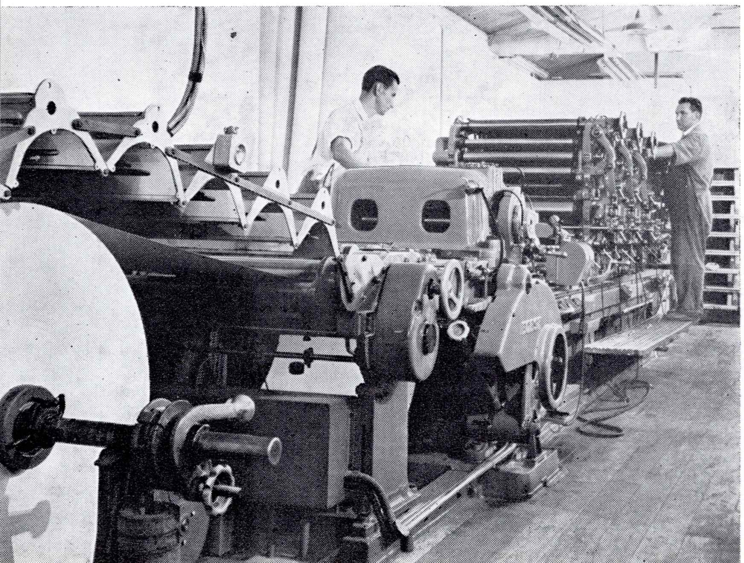


HIGH SPEED GLUER, which operates at speeds up to 40,000 per hour.

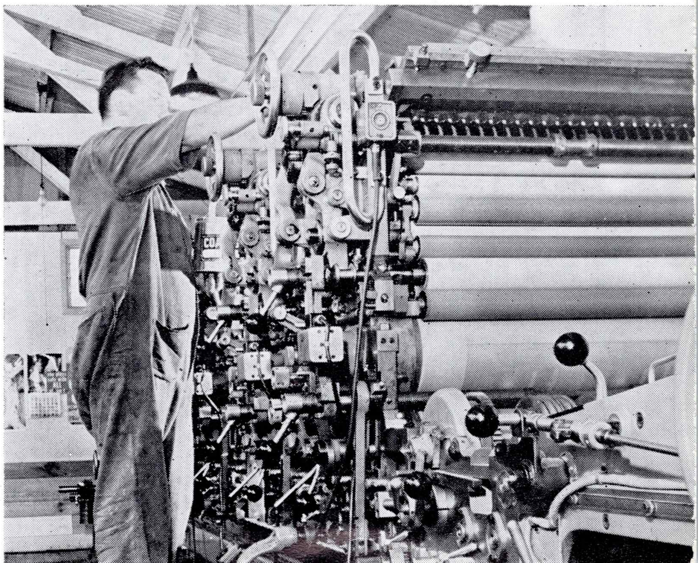


COLOUR LITHOGRAPHIC MACHINES, which print up to 6,000 sheets per hour.

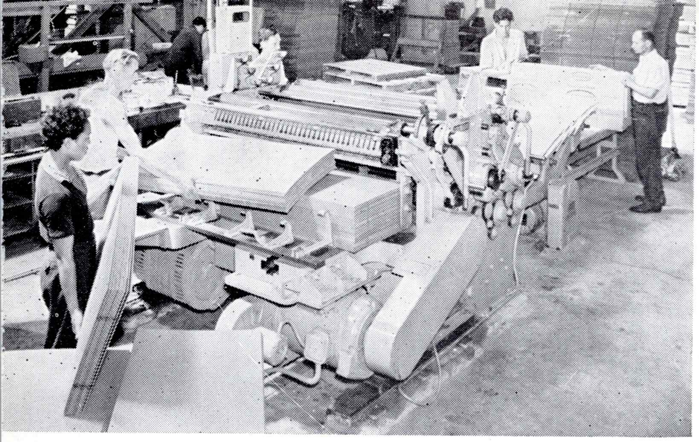
D-64



END VIEW OF BOBST four-colour printer and carton maker.



CLOSE-UP OF BOBST four-colour printing battery.



TWO-COLOUR PRINTER, CREASER AND CUTTER.

HIGH-SPEED CONTAINER STAPLING MACHINES. Both the machines pictured here are in operation at the Container Division.

CARDBOARD BOX COMPANY LIMITED

Head Office, Box and Carton Factory: Great South Road, Penrose

Associate Company: Flexible Packaging Ltd, Great South Road, Penrose

Container Division: Pilkington Road, Tamaki

Packaging is a vital and fascinating industry in which men and machines, ideas and talents, psychology and design, artist and administrator, salesman and printer combine and co-operate to meet an enormous ever-growing demand for cartons and packs that the manufacturer requires for marketing his goods attractively and hygienically.

New Zealand's experienced and versatile package engineering organisation — The Johnston Cardboard Box Co. Ltd. — employing well over 200 people, offers an unsurpassed service in this creative industry. Founded on June 18, 1937, by the Johnston brothers, the Company has made spectacular progress within a relatively short time. Initially, limited space and lack of capital presented obvious production problems, but initiative and sheer tenacity eventually led to the establishment of this business. As a logical sequence, some 15 years later a subsidiary company, Flexible Packaging Ltd., was established as J.C.B.'s film-converting division, to design, manufacture and print polythene and cellophane packs and bags. Currently, "Flexible" bags are used by the million throughout the Dominion. Of interest is the fact that Flexible Packaging Ltd. owes much of its pre-eminence in this field to its close association and liaison with Milprint Inc. of U.S.A. — the world's leading converters of flexible film — plus the fact that J.C.B. holds sole New Zealand rights to Milprint's advanced processes.

New Ways to Efficiency

In the beginning, J.C.B. primarily undertook the production of cardboard containers. Sweden and U.S.A. were the source suppliers of the raw material. Plant installed included machines copied from American models and built locally.

With the outbreak of World War II, the Company swung over to essential work and contributed to the war effort by supplying butter boxes and radio components. On the cessation of hostilities, rapid strides were made and, today, J.C.B. is an outstanding example of an all-inclusive packaging industry meeting the requirements of countless users for a gamut of products. Australia, Fiji, Samoa and Norfolk Island constitute outlets for many of the products of this organisation.

Efficiency has high-lighted the Company's production and it has thereby made a solid contribution towards the build-up of the national economy. Package planning and administration, cost analysis and control, quality control, inventory control (the Co. has developed the most up-to-date and comprehensive system), and many other similar management techniques have been incorporated into its production policy. These features allow of an arterial flow from salesman's order through designing channels to artist, die makers, printers, etc., to an end product of unsurpassed quality and standard in the carton, display, flexible and acetate field.

A first essential and ancillary to management, requiring peak production and performance in a highly competitive sphere, is obviously the installation of first rate plant. Of the building of new machines and equipment there is no limit and, this is particularly evident in the realms of packaging where increased speeds, greater versatility and accuracy are mandatory. J.C.B. has established a progressive policy by installing machines comparable with the best in the country and the most modern available. Quite naturally, this organisation has profited by its approach to packaging, not only in the flexible industry in which they hold certain exclusive rights, but it has also become New Zealand licencees for the Davidson Self Sealing Boxes — a product of the renowned British Company of that name.

Special machinery, to mention but a few types, include Window machines, high gloss waxing plant for frozen food cartons, Bronzing machines, 4-colour Bobst Lithographic printer and carton maker (which prints not only in four colours — but also cuts, creases and strips the carton automatically at the phenomenal output capacity of 25,000 cartons an hour), Speed Lock automatic bottom glueing machine, offset printing presses (printing in 2 colours at the rate of 6,000 sheets per hour), and an electronically controlled automatic carton glueing machine which folds and glues all types of cartons at colossal speeds.

The Packaging Age

The Johnston Cardboard Box Co. Ltd. envisages a lively future for the packaging industry and subscribes, along with many others, to the concept that shopping has become something of an exercise in artistic discrimination rather than an unpleasant task. As such, commodities have, therefore, to advertise themselves colourfully, ingeniously, imaginatively and enticingly, clamour for attention and demand to be bought. This organisation is attuned to meet these salient requirements and any other exigency which might arise in an industry whose importance is ever increasing. J.C.B. faces the future with absolute confidence.

Directors: L. Wiseman (Chm.), H. P. Johnston (Mgr.), C. A. Pittar, F. A. Newman, P. Haege (Sydney).

New Zealand's largest caravan organisation

BRYAN JACKSON (N.Z.) LIMITED

DEMONSTRATING THE LIGHTNESS OF THE "COUNTESS" 14 ft. 9 in. CARAVAN: A 1954 Zephyr towed two of these models over the gruelling 20 miles of the Auckland Harbour Bridge procession.

228 Marua Road, Mt Wellington, Auckland

Bryan Jackson's childhood impressions on caravaning trips with his parents led, in later years, to a firm belief in the potentiality of a caravan industry and the subsequent establishment of New Zealand's largest caravan organisation. Bryan's achievement was not without sacrifice and strenuous effort. From the age of 11 years, he undertook the reconditioning of 82 bicycles, the cutting and selling of over £1,500 worth of manuka firewood and clothes props, etc., in order to accrue the capital required to found, on leaving Auckland Grammar School in 1949 at the age of 16 years, Jackson's Caravan Rentals.

Between 1950-1956, this youthful enthusiast carried a peak rental fleet of 30 caravans. Sales of reconditioned and used vehicles rose steadily. The Depots at Orakei, Remuera and Grey's Avenue, City became inadequate. Accordingly, the Mt. Wellington property was acquired and, in 1957, the firm was renamed Bryan Jackson (N.Z.) Ltd.

Coincident with its registration, the Company was appointed sole North Island (N.Z.) agents for Bluebird Caravans of England — the world's largest caravan manufacturers. Within six months Bluebird sales reached the £48,000 mark; today, this organisation's turnover approaches £100,000.

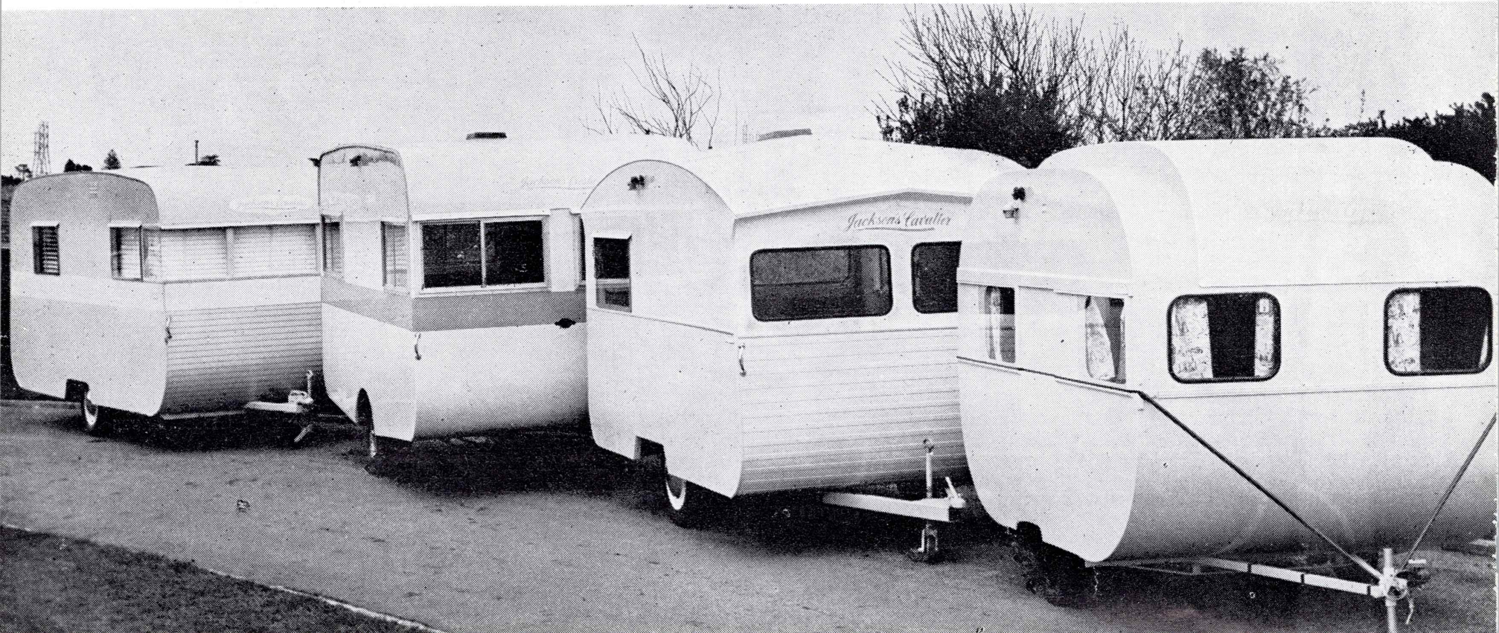
A 4,000 sq. ft. factory replaced the old Mt. Wellington building in 1958, and the first 14 ft. 9 in. "Jackson Countess" Caravan was designed and built. Three other models are now manufactured in separate factories — the 8 ft. "Cupid," 10 ft. "Cavalier" and the 12 ft. "Cresta." The Cupid is the lightest caravan in New Zealand and is produced by Wing Air solely for Jacksons. The total factory area now used to manufacture the Jackson range is over 7,500 sq. ft. A conservative estimate of the capacity of these factories is 180 caravans a year.

Bryan Jackson (N.Z.) Ltd. — the only firm of its kind in New Zealand — has built its favourable reputation and its phenomenal success upon low profit margins on mass sales. The Company offers a complete caravan service, which is synonymous with its slogan 'if it's to do with caravans it's our business.' This service incorporates buying, selling (new and used), hiring (touring or stationary), importing, towing and reconditioning which is a speciality, wholesale and retail selling of caravan parts and awnings, valuing and insurance.

James Boyd, another caravan enthusiast, has joined the Company as the assistant manager and has contributed immensely to the Company's rapid development. His projected world tour in 1960 in order to assimilate new ideas will undoubtedly be benefiicial to this organisation.

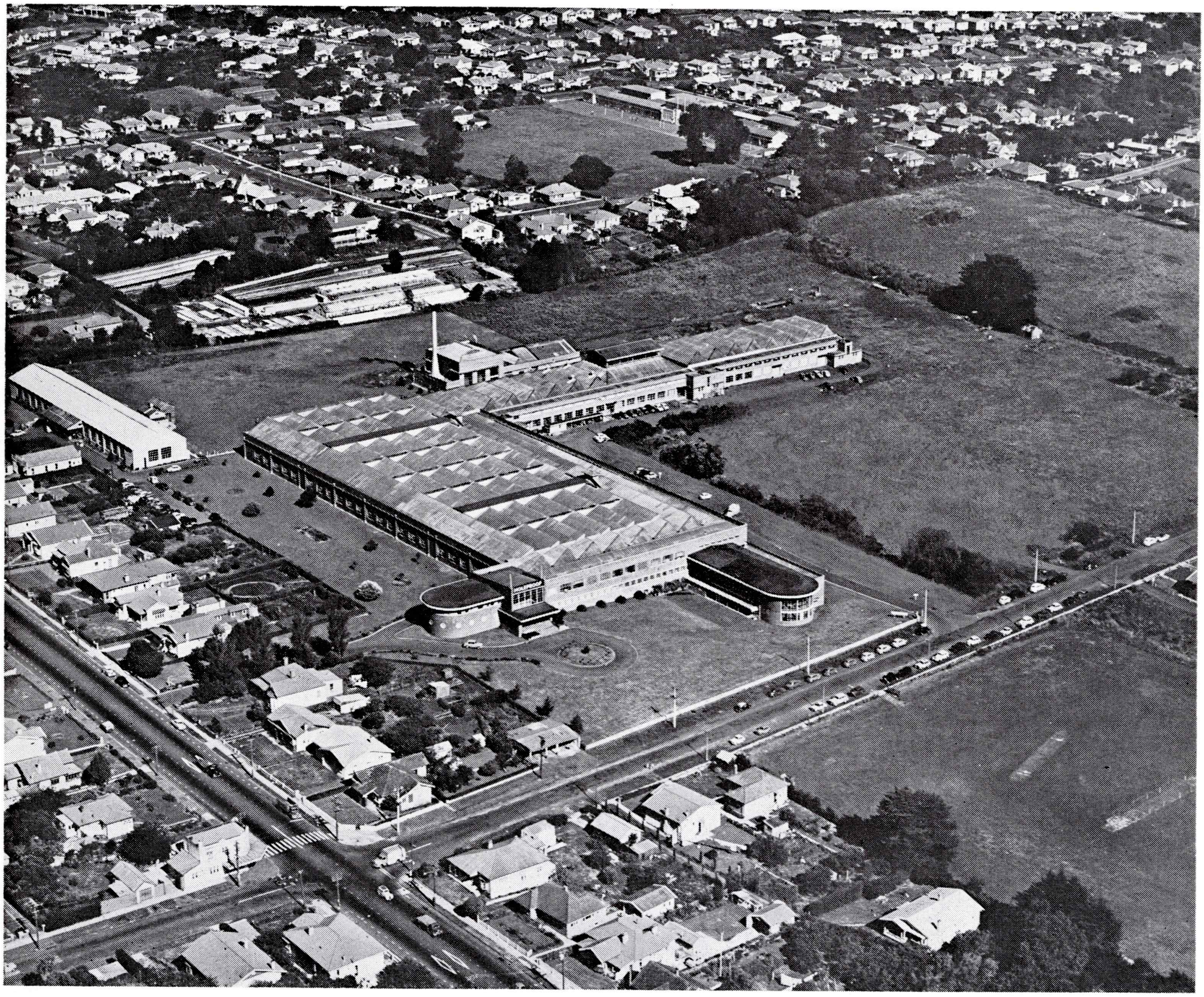
Directors: Managing Director, Bryan Jackson; Manager, James Boyd; Foreman, Al van Skiver.

THE JACKSON CARAVAN RANGE: (from right) 8 ft., 5cwt. "Cupid", 10 ft. 10 cwt. "Cavalier", 12 ft., 12 cwt. "Cresta" and the 14 ft. 9 in. 14 cwt. "Countess."



HOLEPROOF INDUSTRIES LTD.

Royal Oak Auckland



Headquarters of one of New Zealand's leading and most modern Textile Organisations, situated at Royal Oak, a picturesque suburb of Auckland.

Whites Aviation.

MANUFACTURING PROGRESS IN NEW ZEALAND

A Survey by the Chairman of Directors, Holeproof Industries Ltd.

The progress in establishing manufacturing industries in New Zealand during the last 20 years has been above expectations.

Due to the full employment policy maintained by successive Governments, employment conditions are very satisfactory and employees are enjoying very favourable terms of remuneration. Our working conditions, amenities and facilities, as well as the social provisions for our employees, are based on sound humanitarian principles and are a credit to our people and the country at large. Just to mention a few of the privileges:

Forty-hour week.	Shift Allowances.
Morning and afternoon teas.	Holiday Pay.
Lunch hour.	Penalty Rates, etc.
Tea money.	

In addition, a female cannot be employed on a second shift, and a large number of males are employed on jobs normally performed by females.

Another aspect of importance is the employment of a large number of senior males instead of young boys. This is due to the shortage of young operators.

Last, but not least, is the very high percentage of married women, who have the duties of looking after their homes and families in addition to their jobs.

Taking all points into consideration, one must naturally come to the conclusion that, due to the above system, our cost of production is high and, as a result of the outstanding earning capacity of our working populace, we, in this country, maintain the highest standard of living in the world.

THE FUTURE POSITION OF INDUSTRY WITHIN THE NEXT 20 YEARS

I have outlined above the basic principles of our existing conditions in the industrial field.

Our economists envisage the continued growth of our population and forecast, within the next 20 years, an increase of 75% in the number employed in our industries. This phenomenal increase is supposed to be absorbed mainly by manufacturing industries, which is a very ambitious programme indeed. Sound, forward planning is therefore required in order to implement such an important and ambitious scheme.

The employment of our present labour force, and the absorption of approximately 150,000 additional employees into our industrial economy, can only be realistic if we maintain the following principles:

(a) New Zealand industries must enjoy no less than 95% of the local market requirements.

(b) The imports of 5% of the total requirements should enter the country at rates of duty based on realistic tariffs, which should bear a relation to our own cost of manufactured goods, but not, as at present, on tariffs established 35 years ago.

(c) Import control and appropriate tariffs must be our standard pattern for the protection of local industries and the maintenance of full employment.

(d) Industries should be encouraged to continually modernise plant and equipment.
and last, but not least,

(e) Special credits should be made available at normal bank interest rates to finance manufacturers' stocks of raw materials and debtors.

—H. Korman, Chairman.

HISTORICAL BACKGROUND
HOLEPROOF INDUSTRIES LTD.

In 1938, Messrs. H. and S. Korman of Melbourne, Australia, turned their attention towards New Zealand. A survey of the Dominion decided them to establish a small plant to manufacture hosiery and, on the 30th July, 1939, Korma Mills Limited, as it was then called, commenced operations in the National Mutual Buildings, Auckland.

Twelve machines were imported and a staff of six were sent from Australia. By December, 1939, the staff had increased to 25 and the output built up to 700 dozen hose weekly.

Despite many setbacks and shortages during the war years, a public company with a capital of £400,000, was formed on the 6th May, 1946, and the erection of the present mill (as shown below) was commenced.

TODAY:

A firmly established processing and manufacturing enterprise with its headquarters set in 20 acres of park-like grounds. This up-to-the minute building covers a quarter of a million square feet and is the home of Holeproof, where over 1,000 persons are employed.

Capital has progressively increased to £1,000,000, the annual turnover has grown to nearly £3,000,000, and the payroll exceeds £950,000.

Surely, this is graphic proof of the Company's steady advancement.

THE LABORATORY

The Laboratory is the technical nerve centre of the organisation and its work is becoming more complex and important with the advent of the host of new fibres with their unusual and desirable properties.

These fibres require humouring in handling and create numerous new problems in Spinning, Knitting, Weaving, Dyeing, etc.

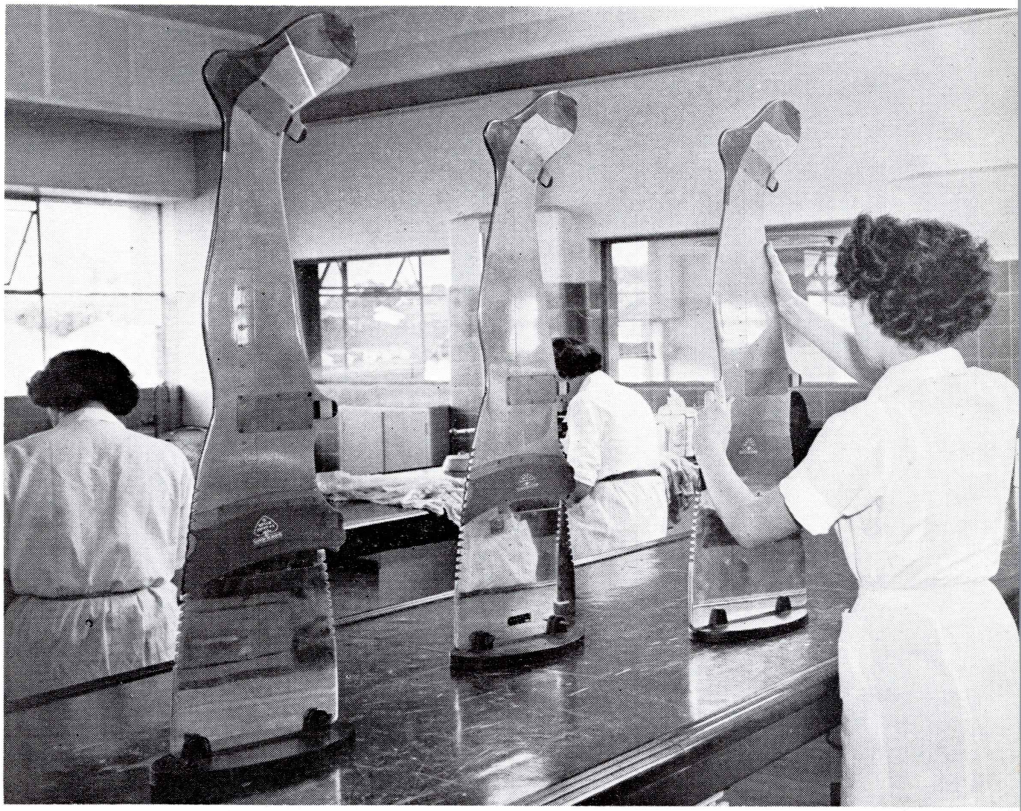
Quality control methods are applied to testing raw materials and goods in process, to ensure that the final products are controlled for size, weight, strength and all properties necessary to meet consumer requirements.

Chemical and physical testing is carried out and new shades are being constantly provided for the Dyeing Department.

Scientific equipment is used for testing diameter and length of fibres, the count and strength of yarns, fabric strength and wearing ability, etc. Other machines test fastness to light and washing.

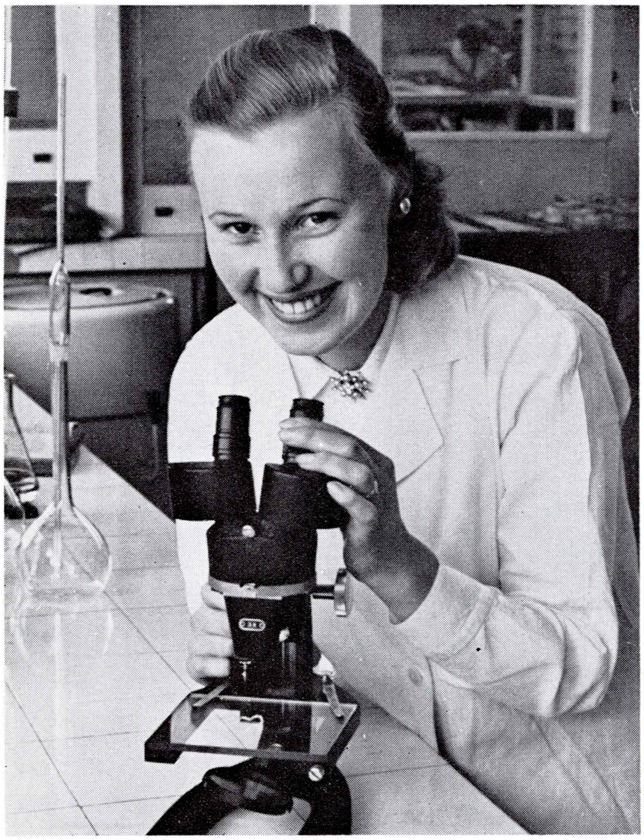
Rigid control by the Chief Technologist and his senior technicians, who are equipped with the latest scientific data from overseas, govern every phase of manufacture. The aid of modern machinery and skilled personnel results in quality products allied to lower prices.

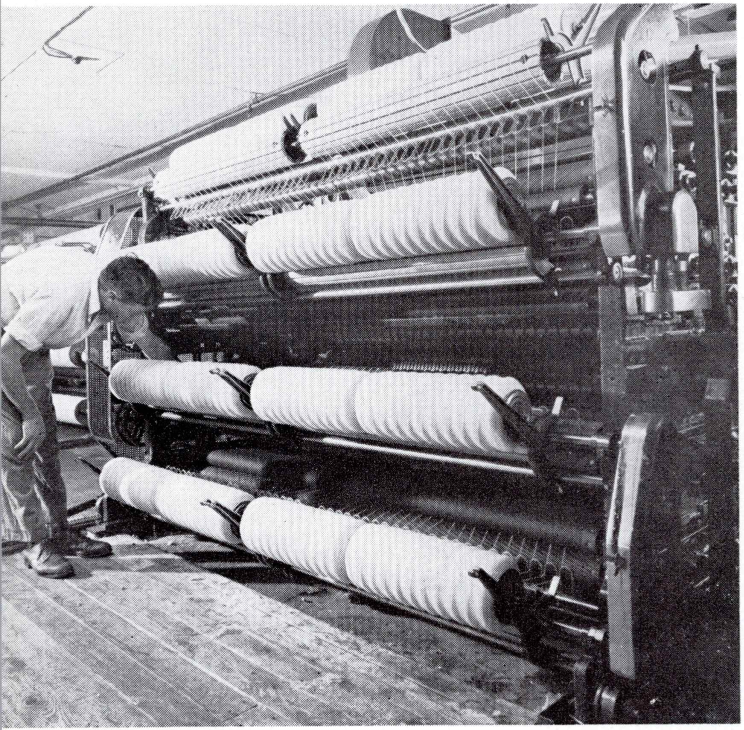
Holeproof seeks always to improve the durability, design, finish and usefulness of its merchandise and is satisfied with nothing but the best.

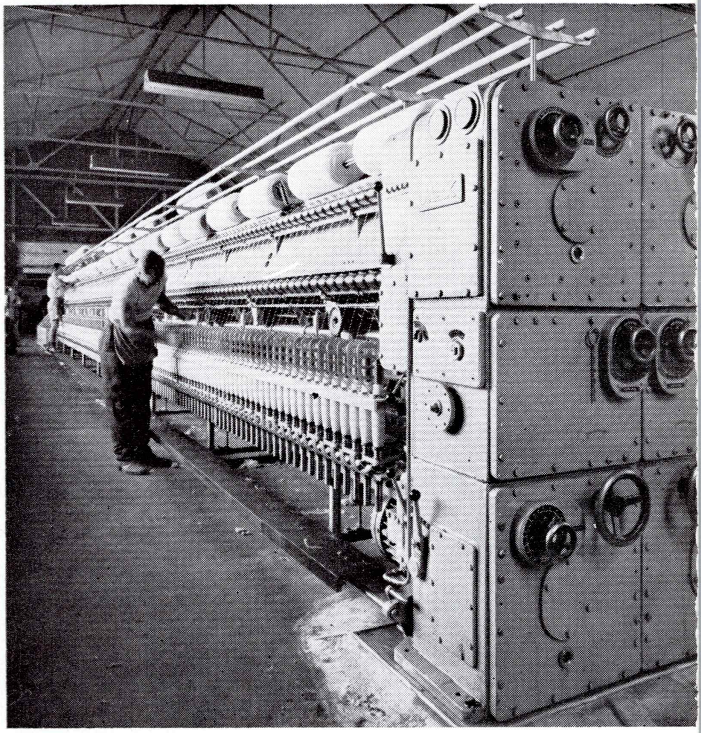


(Above) A section of the Laboratory showing girls testing the finished length and volume of nylon fully-fashioned hosiery.

(Below) One of Holeproof's laboratory assistants can be seen making a fabric test.

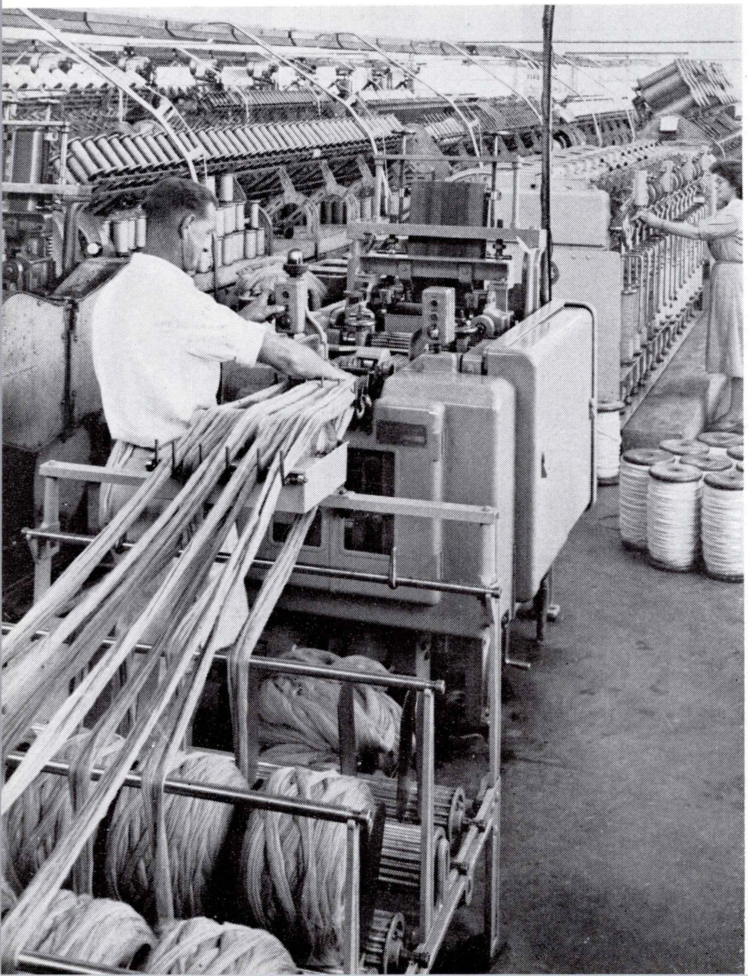






Initially, the Carding machine (top left) changes the wool into yarn by separating the fibres with a rotary combing action while mixing the long and short fibres. The opened wool is finally formed into soft, round threads, which may be seen in the photograph being wound on to spools. At this stage it is termed carded roving.

On the Spinning Frame (above), the yarn is being drawn out, twisted and wound on to bobbins, thereby converting the carded roving to spun yarn, which is characteristically soft and fuzzy. Greater strength is gained by twisting one or more yarns together and unusual effects are obtained by spinning fibres of varying thicknesses and colours.



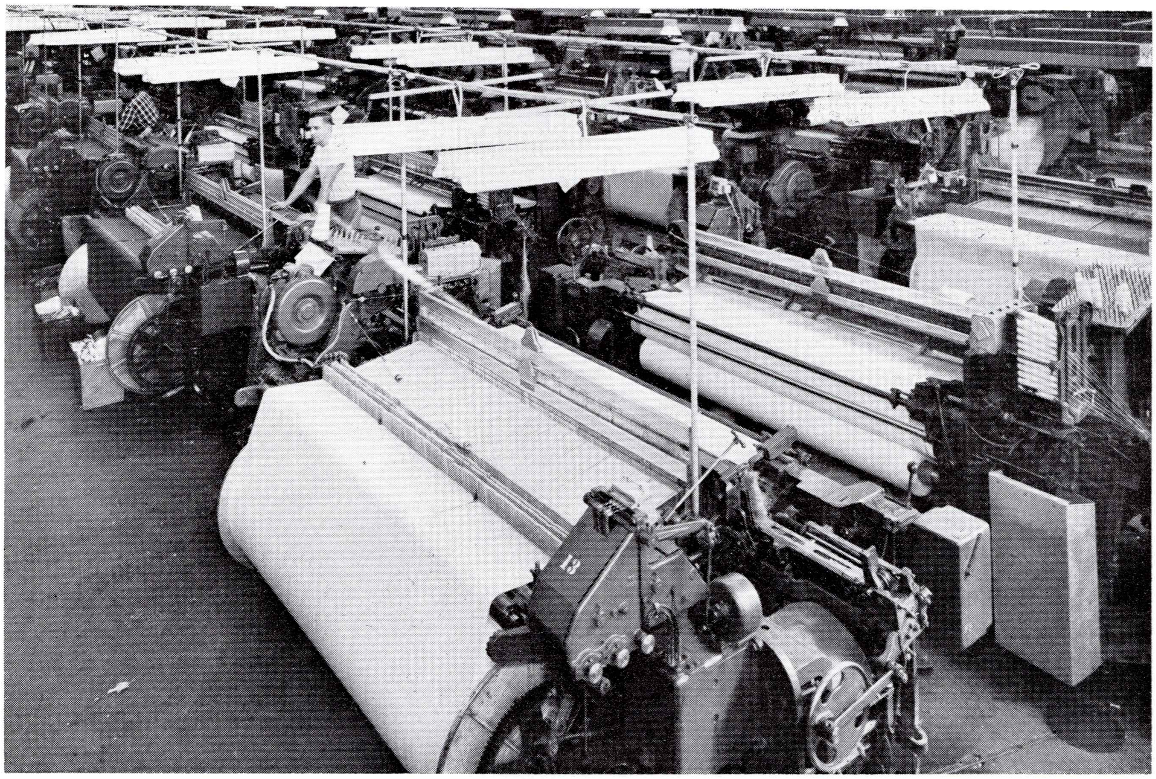
WORSTED SPINNING

Worsted spinning requires long stapled fine wools, which are straightened and laid side by side in such a manner that the relatively thick strands, after passing through several machines, finally produce a fine thread of worsted yarn.

It is interesting to note that, before the wool passes through the drawing section, a pound weight may measure forty yards but, when it is finally spun into a thread, the same weight is approximately nine miles in length.

The bulk of the yarns produced by the Woollen and Worsted Spinning Departments is used by the Garment, Hosiery and Weaving Sections at Holeproof, but a large quantity is sent to other mills throughout the Dominion.

Left is pictured the Auto-Leveller Gill box and drawing frame, reducing wool from the heavy top sliver to roving yarns suitable for spinning into thread. This Auto-Leveller Drawing System, together with the new Spinning Unit, has revolutionized the method of worsted spinning throughout the world.

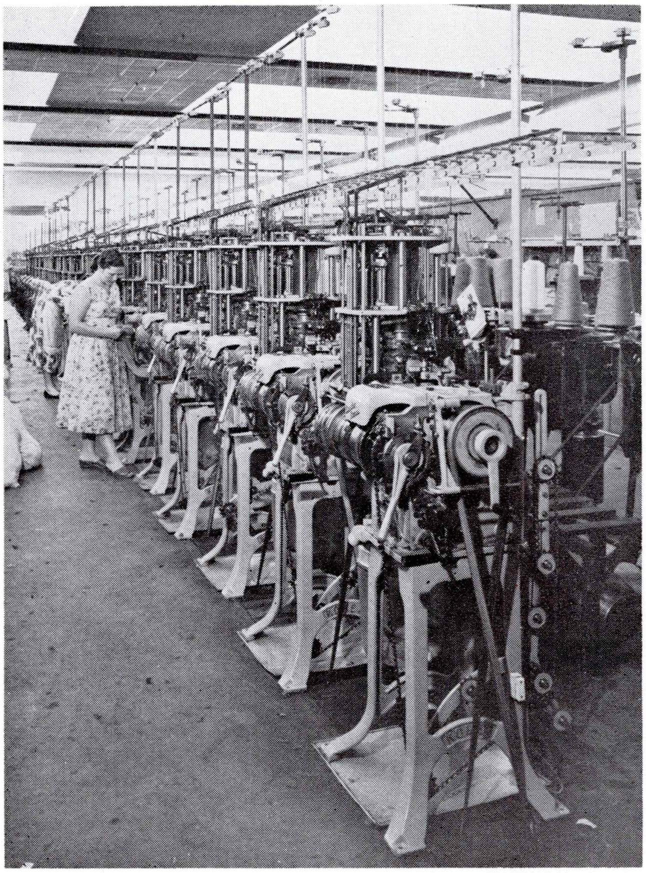


Weaving consists of interlacing two sets of yarn, known as the warp and weft. The warp is supplied from a large roller (beam) and the weft from a shuttle, which is a boat-like receptacle propelled from one side of the loom to the other.

On a Holeproof loom, the shuttle travels at 45 m.p.h. and at this speed over four yards of worsted fabric is woven every hour.

The picture above shows the new automatic looms, each of which is capable of producing twelve miles of cloth annually. The woven fabric is then inspected in the mending section where any woven or yarn faults are corrected.

Photograph below shows a section of the mending staff at work in the Papakura Branch of Holeproof Industries.



A large quantity of Holeproof's spun yarn is consumed by the Outerwear and Underwear Knitting machines, which produce lengths of plain and fancy fabrics.

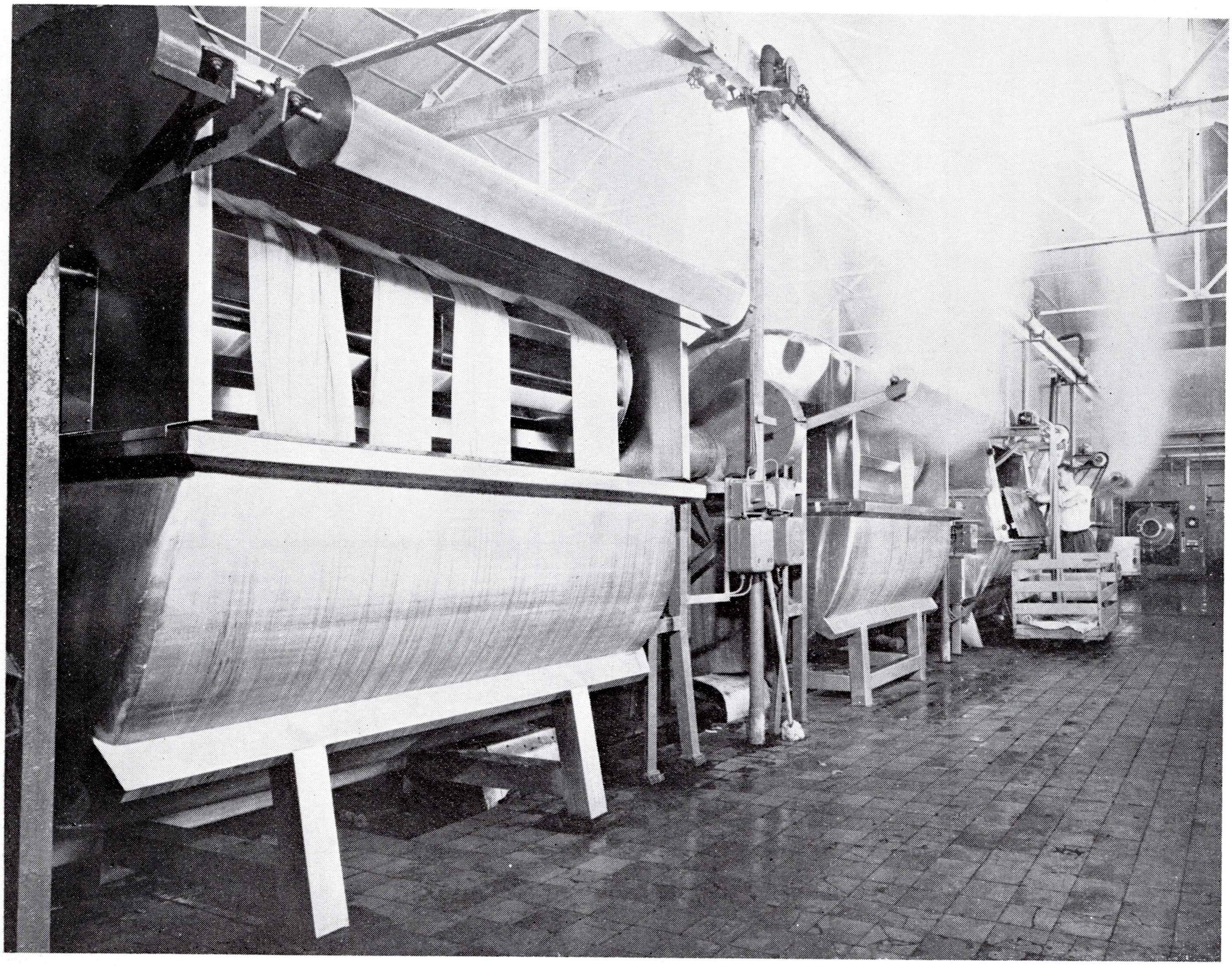
Most of these fabrics eventually find their way to the making-up sections to be manufactured into jumpers, cardigans, twin-sets, underwear, etc.

Tall machines, somewhat reminiscent of Christmas trees, the upper branches of which are laden with cones of coloured wool, feed the yarn up to the top of the tree and down into the centre of the machine where literally hundreds of fine needles pick up the thread and knit a continuous tube of material.

The pre-arranged pegs of a control drum dictate the action of the needles to produce the required design.

The Hose Knitting Department has a wide variety of machines which resemble their big brothers in the Fabric Knitting and the latest fully automatic children's hose machines, seen in the picture at the left, produce strings of plain and fancy socks joined together like sausages. The operator is shown separating them from the machine prior to examination. From the knitting machines, the socks are transferred to the Linking Department to be joined across the toe.

The linking operation (below) is being carried out at Holeproof's branch factory situated in the suburb of Panmure

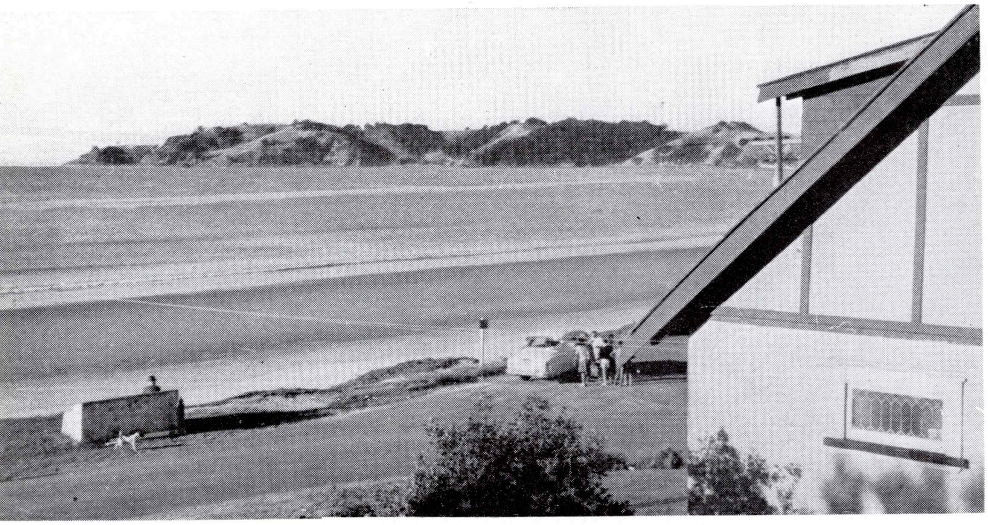


Unlike most manufacturing organisations who are forced to send their work to commissioned dyers and finishers, Holeproof has its own Dyehouse and wet and dry finishing Department.

The Dyehouse operations include loose wool and top dyeing, yarn and piece dyeing. It is responsible for all hose dyeing and has its own experimental and testing section in the Laboratory. In fact, the Dyehouse plays an important part during all stages of processing.

The Finishing Division does an equally exacting job with all knitted and woven fabrics.

The illustration shows a section of the Dyehouse, where worsted and woollen piece goods are being carefully dyed in stainless steel winch dyers.



The Royal Oak Headquarters keeps in close contact with its branches where a considerable proportion of the garments are manufactured.

These assembly units are all set in pleasant surroundings and the picture on the left illustrates the beautiful sea view seen from the Waiheke Island Workroom.

"Waiheke," with its staff of 30, is engaged in the assembly of blouses while "Te Awamutu," which has a payroll of 50, manufactures the well-known Holeproof slacks and drill shorts.

The Morrinsville branch (centre photograph), which was opened in 1957, is now known as the Beachwear Unit and it is there that the world-famous Rose Marie Reid swimsuits are made. These garments are manufactured under exclusive license to Rose Marie Reid of California, America, and must conform rigidly to all "Rose Marie Reid" standards.

The Sportswear and Shirt Divisions operate in two specially designed workrooms at Auckland and the underwear and woollen outerwear departments are domiciled on the main production floor. It is in these sections that a number of Holeproof's exclusive creations are manufactured with meticulous care and under strict supervision. Naturally a considerable amount of forethought and a high degree of skill is required before the garments are produced and it is the Design Room, with its staff of experienced workers, which is responsible for these ideas and designs.

HOLEPROOF NZ LTD.
HOLEPROOF NZ LTD

**HOLEPROOF
INDUSTRIES
LTD.**

FULLY-FASHIONED AND SEAMLESS HOSIERY

In this Department the Holeproof story is taken up with the importing of synthetic yarns from overseas. Nothing is taken for granted and the photograph below shows a laboratory assistant handling nylon yarn which has just arrived from England.

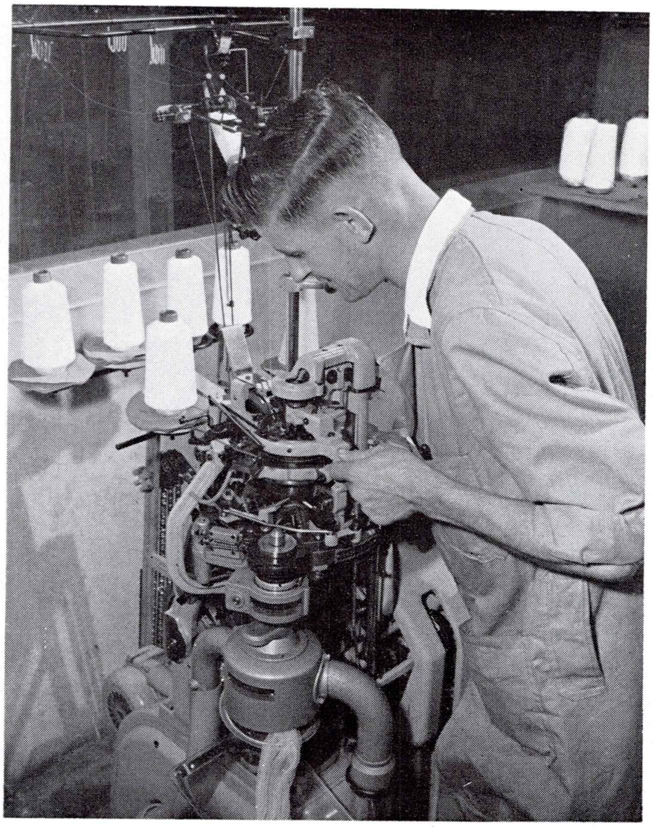
Before going to the knitting machines, this yarn is tested for denier count, oil content, size and strength, etc.

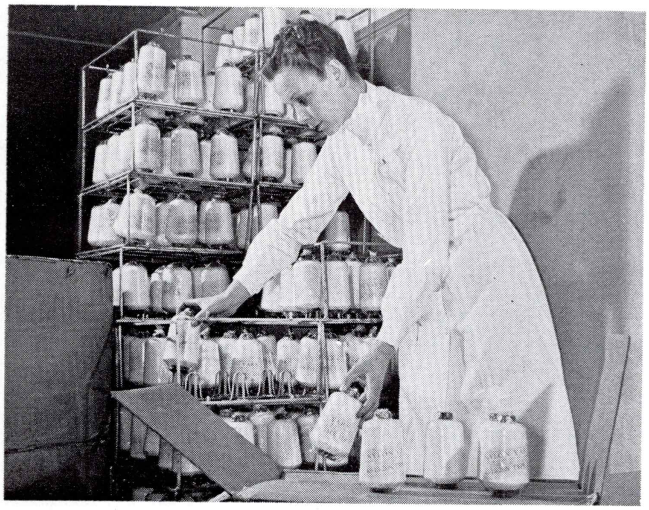
Seamless stockings are knitted in tubular form (see adjoining illustration), whereas fully-fashioned stockings are made on flat machines, which progressively shape the hose during the knitting operation.

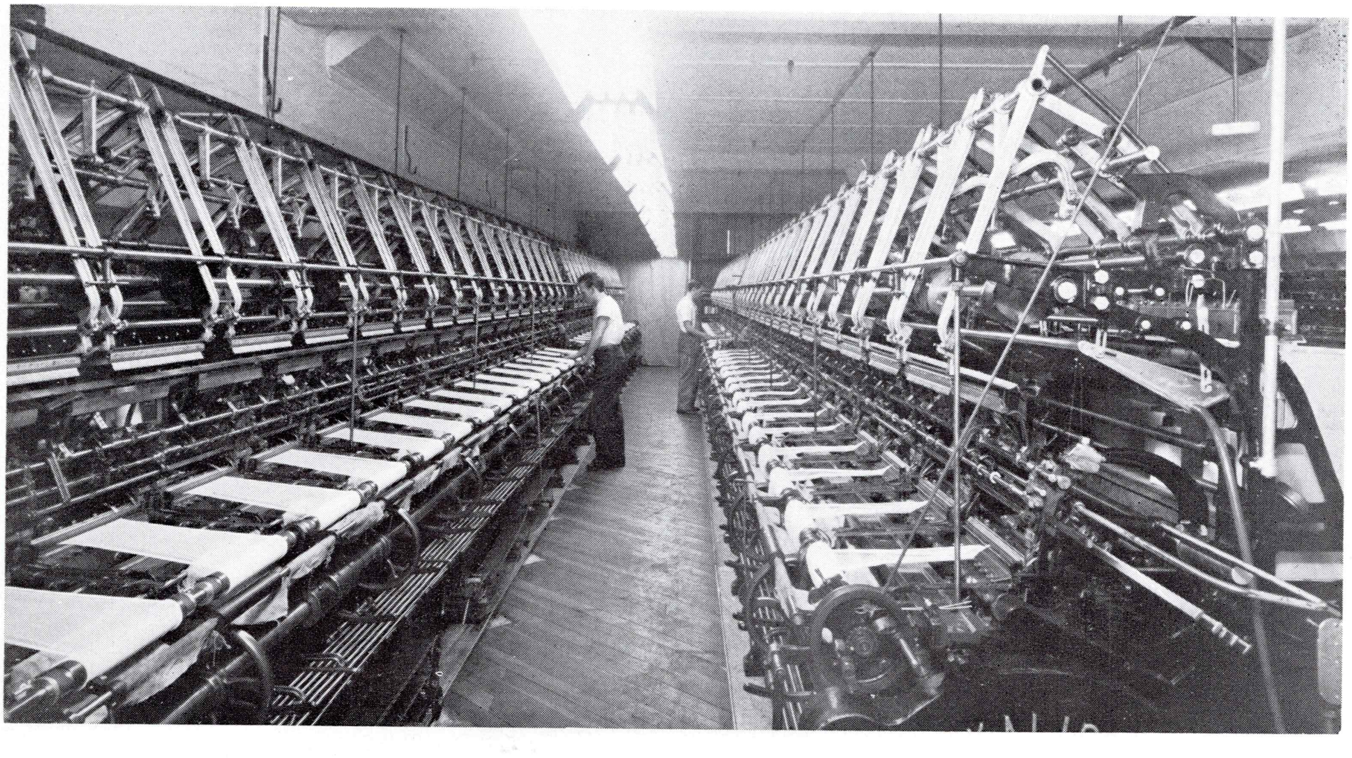
The intricacies of these machines can be appreciated when the reader realises that on a 75 gauge machine there are 50 needles to every inch of width.

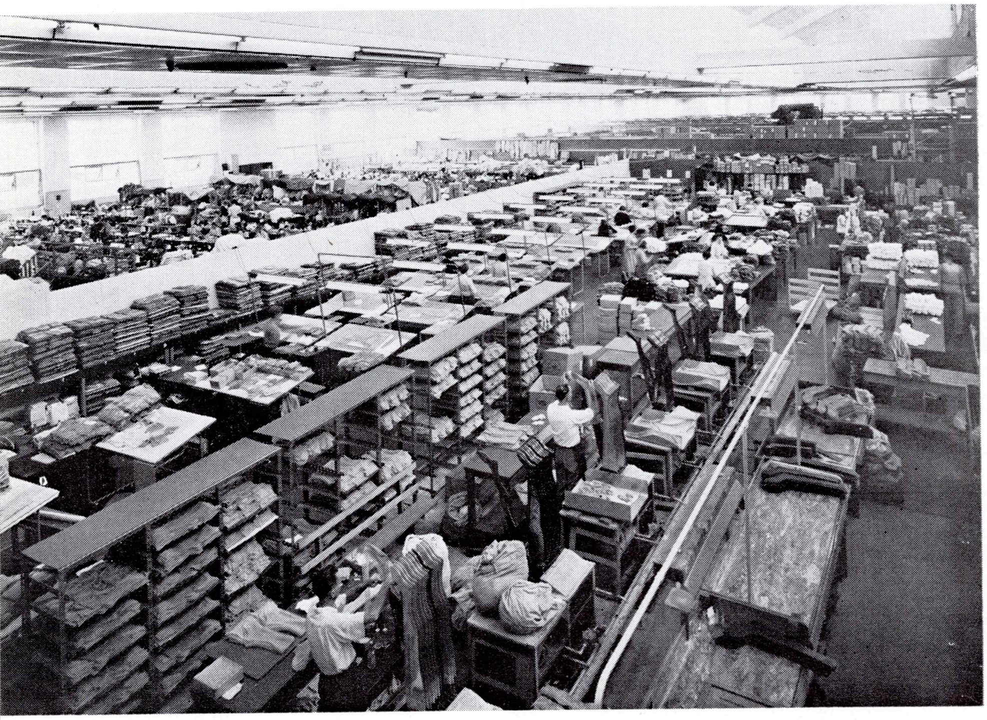
The so-called multiple-head machines make numerous stockings at a time and the lower picture shows two of Holeproof's fully-automatic units, which are knitting 32 stockings each.

(This Section continued overleaf)







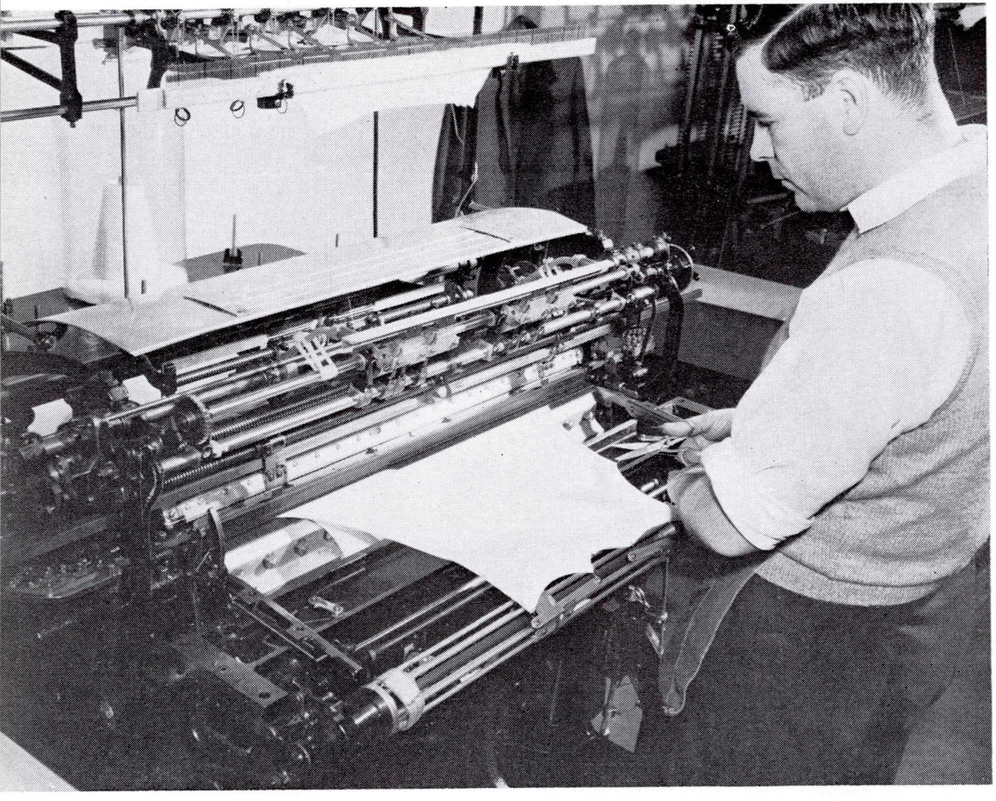


After knitting, the stockings are joined by a seaming or linking operation and, following several further processes which include dyeing and boarding, they eventually arrive at the finishing division. This section, where final inspection is carried out, functions as one of Holeproof's several "Detective offices". It provides an added assurance that, with meticulous regard to accuracy and detail, Holeproof is able to attain an unexcelled standard of quality to serve your every-day needs.

The nylon inspection and pairing tables, with their individual fluorescent lights, can be seen in the background of the picture (left) while to the right are the transferring, labelling and boxing benches.

Stockings in cellophane bags are now ready for despatch to warehouses.

FULLY-FASHIONED OUTER-WEAR



The manufacture of fully fashioned outerwear garments was commenced during the latter part of 1958. New machinery was installed and, together with Holeproof's technologists, a nucleus of skilled personnel from U.K. have developed this section into a flourishing department.

A fully fashioned garment machine is illustrated, knitting the body of a Banlon cardigan. The operator is cutting off the surplus end of yarn.

HOLEPROOF
Rose Marie Reid
HO
HON
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R R

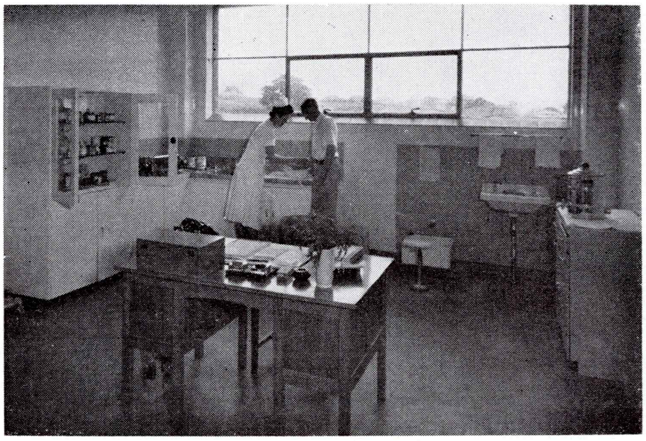
A Holeproof Sales Display at the Auckland Easter Show, featuring the world-famous Rose Marie Reid Swimsuits.

The wide variety of textiles made by Holeproof must be eventually consumed by the New Zealand public. The distribution of these products is controlled by the Sales Division with offices in the various centres and approximately 30 representatives covering the length and breadth of the Dominion. Holeproof products are stocked by 3,500 retailers.

It would be superfluous to say that the administration of a 'vertical' organisation of this nature is a difficult task. However, although achievement in production and sales is the test of success and Holeproof has passed this acid test with honours, the Company has never lost sight of the facilities that it feels must be accorded to its huge staff.

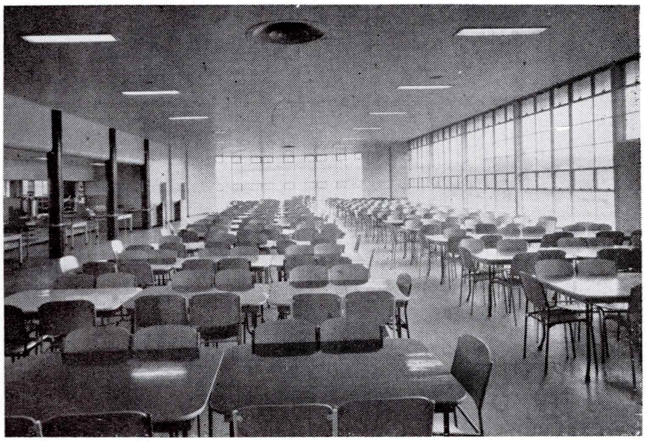
At the same time, the Social Club Committee is to be congratulated for the way it has provided weekly lunch-hour concerts, regular evening shows, dances, fishing trips and picnics. They have also organised cricket and softball teams which participate in open competition.

There is constant contact between management and worker and the following pictures graphically illustrate some of the amenities that have been provided.



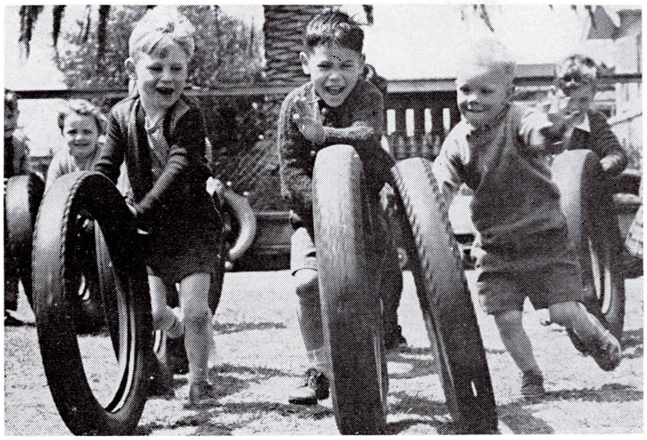
CLINIC

A trained sister is in permanent attendance and a doctor makes daily calls to Holeproof's modern clinic.



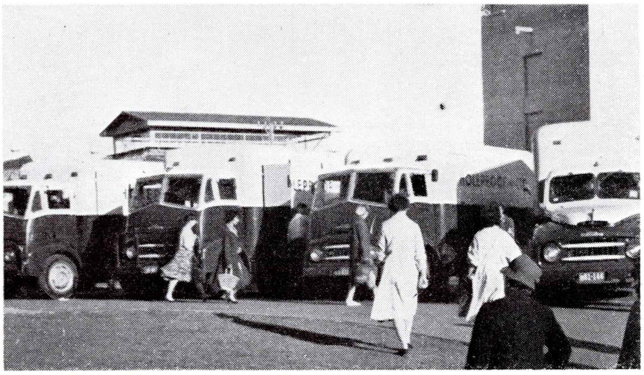
CAFETERIA

A photograph showing the well appointed and ventilated cafeteria at Royal Oak.



KINDERGARTEN

Holeproof instituted one of the first industrial kindergartens in New Zealand and it has been run successfully for over a period of ten years. The kindergarten cares for the children of workers during the whole working day. With the trained staff and specialised cooking arrangements, the youngsters are well and truly catered for. Even beds are provided to ensure that the kiddies have their afternoon rest. The picture is a true reflection of health and happiness.



TRANSPORT

Holeproof was again one of the first in the field when it decided to provide free transport for its women staff living in the surrounding districts. Almost 250 people are transported to and from work in the Company's own vehicles which have been fitted out for the purpose.

Photos: Sparrow Industrial Pictures.

The foregoing is but a brief survey and appreciation of the part that Holeproof is playing in the Textile fields of New Zealand.

Founders of the Tufting industry in New Zealand

PACIFIC CHENILLE CRAFT COMPANY LTD

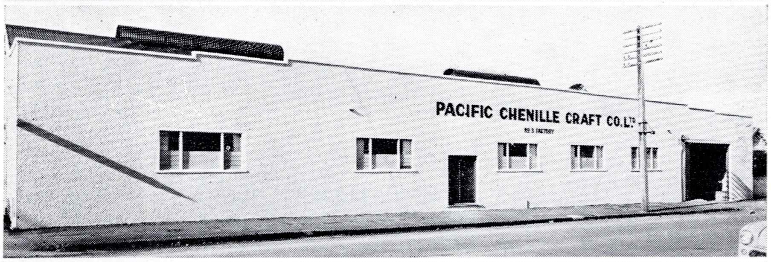
Head Office : S.M. Motors Building, Ghuznee Street, Wellington

Factories : Marton (3), Turakina, Halcombe

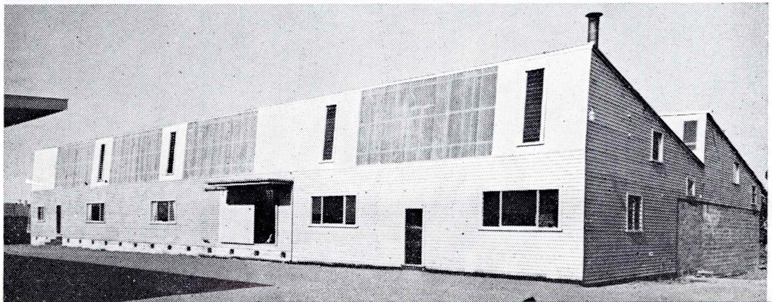
(Top to bottom) FACTORIES: 1. Hair St., Marton; 2. Main Highway, Turakina; 3. Wellington Road, Marton; 4. Halcombe; 5. Wellington Road, Marton.

PACIFIC CHENILLE CRAFT CO. L^TD

PACIFIC CHENILLE CRAFT CO L^TD
TURAKINA BRANCH



PACIFIC CHENILLE CRAFT CO. L^TD
No 4 FACTORY



Distributors: Super-Tex Distributing Co. Ltd., P.O. Box 6444, Wellington.

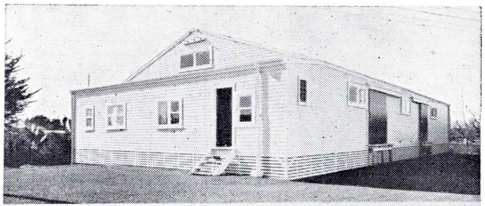
Only 14 years ago the first tufted bedspreads were made in this country. Since then, under the trade brand "Super-Tex" (short for Super-Textile), hundreds of thousands of candlewick bedspreads, dressing gowns and bath mats, as well as tens of thousands of yards of curtaining, have been made, to grace New Zealand homes and give useful and lasting service.

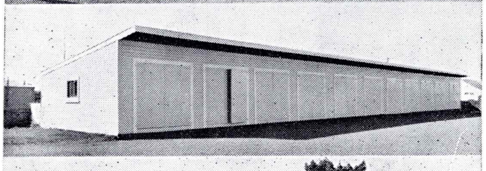
From small beginnings, a large industry has been developed in a short time, thus catching the imagination of all those who have watched its rapid growth. It seems, therefore, that the time has come to tell something of its history, the stage it has now reached, and plans for the future.

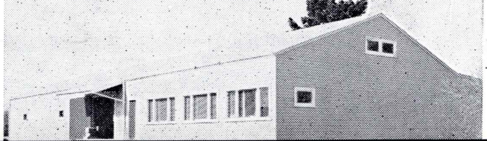
In 1945, when supplies of consumer goods were still short after the war, it was decided to supply the retail trade with merchandise which was extremely popular overseas but unknown to the New Zealand public—Candlewick Chenille bedspreads and dressing gowns.

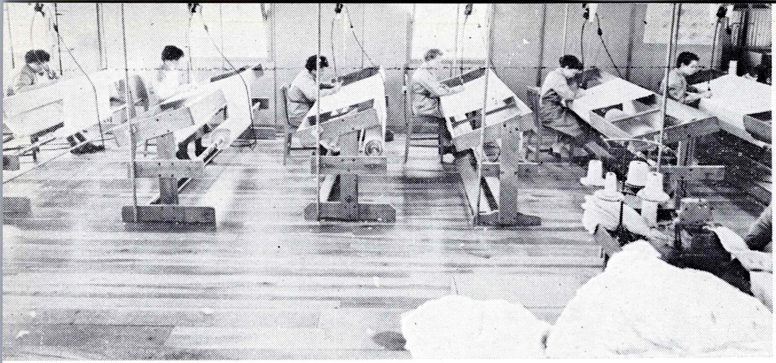
Before deciding on a location for the industry, a survey of prospective areas was made and the Rangitikei district was finally chosen: this for the reasons that suitable labour was available and Marton, the centre of the district, being a railway junction, would make national distribution easier to handle. Accordingly, a building which had been the town dance hall was acquired and reconstructed, and tufting machines installed. These first machines tufted with only one needle at a time, rather like a sewing machine. Cotton yarn and calico

(Top to bottom) WAREHOUSE, Marton; SPECIAL building for housing stencilling machinery, Marton; DESPATCH Building, Marton.

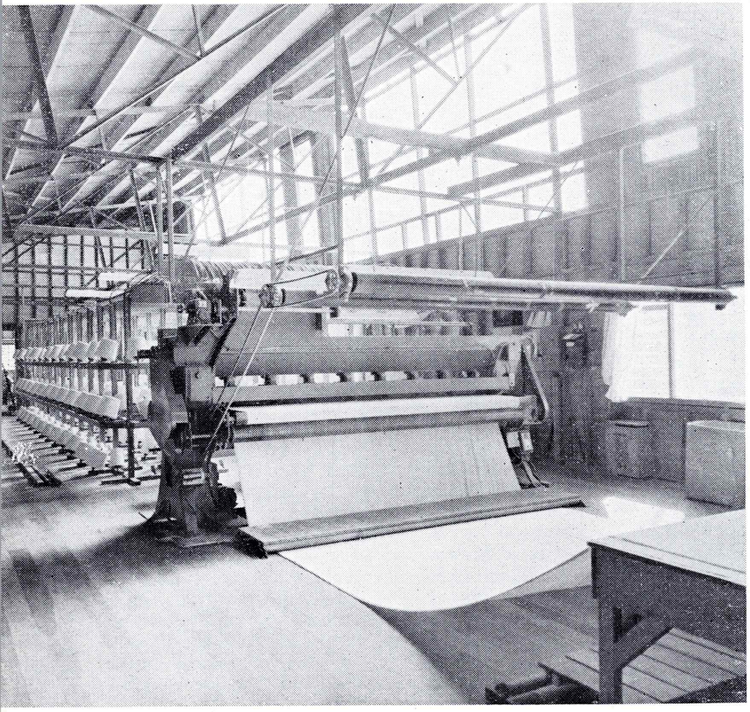








(Above) **HAND EMBROIDERY MACHINES.** Known as 'punchwork', embroidery is done by craftswomen over stencilled designs. (Right) **GIRL AT RIGHT CENTRE** hand stencils design later to be tufted on dressing gown. Two needle machines in background.



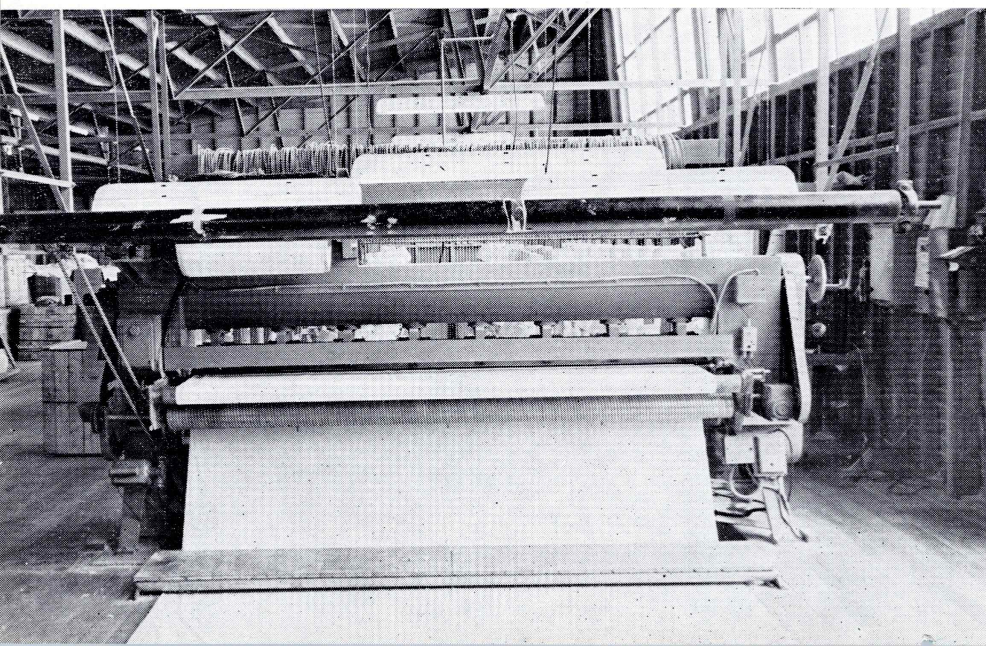
SPECIAL MACHINE FOR latest 'fluff-free' rayon bedspreads.

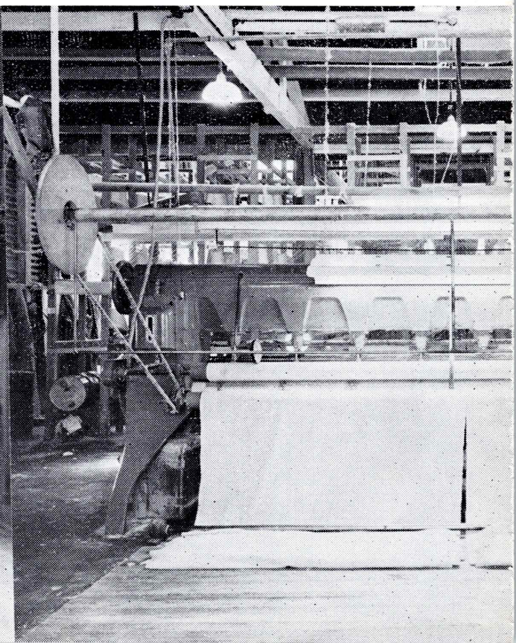
sheeting, which are the raw materials used to make the attractive merchandise so well known today, were in short supply. Overseas exchange and import licence difficulties, a serious flooding of the main factory, a three-months shut-down owing to a shipping strike and many other problems were ahead of the young industry. Not the least of these was the strong reluctance of a large portion of the retail trade to promote the sale of the industry's output. However, concentrated endeavours were made to educate both public and retailer to the value of this type of merchandise. Determined efforts overcame production problems by accepting them as challenges to be met and mastered. The result is that today a large industry is thoroughly established, operating five factories (covering a total of 50,000 square feet). These house huge machines that tuft as many as 650 needles each at once, together with all the subsidiary machines and dyeing plant needed to make the best quality at the lowest price.

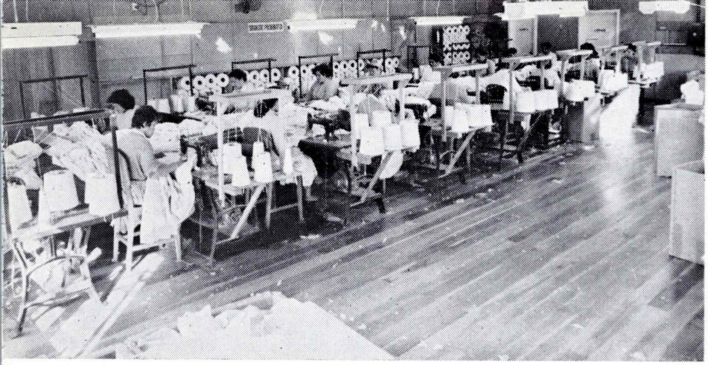
After these initial difficulties in establishing a demand and, of course, organising the productive capacity to supply it, the long planned-for stage has been reached where public and trade acceptance of both "Super-Tex" Bedspreads and "Super-Tex" Dressing Gowns is complete. The factories are able to supply the public's annual requirements of these two lines and the marketing of tufted textiles "by the yard" has commenced. New types of bedspreads, dressing gowns and curtains are being styled for presentation to the trade as soon as the market is ready to receive them in quantities to justify large-scale production.

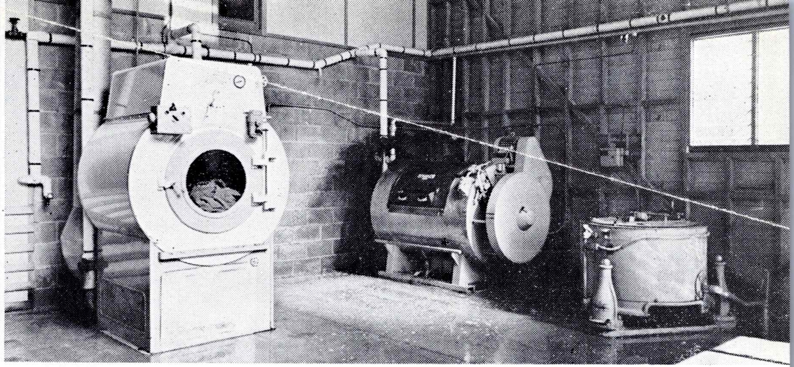
Company policy is to manufacture and supply better quality tufted products in each price group than can be obtained from elsewhere (these are marketed under the brand "Super-Tex" denoting top quality and the brand "Chentuft" for "price line"

(Below) **HUGE MULTI-NEEDLE MACHINES:** These machines automatically perform three operations tufting, looping and cutting at the one time. The largest operates 650 needles.









(Left) FIVE NEEDLE MACHINES are used by skilled operators; **(above) DYE WHEEL**, centrifuge and tumble dryer in a corner of one of the dyeworks.

(Below) FINISHED BEDSPREADS in packing room; dressing gowns; and curtain 'cut service' section of the warehouse.

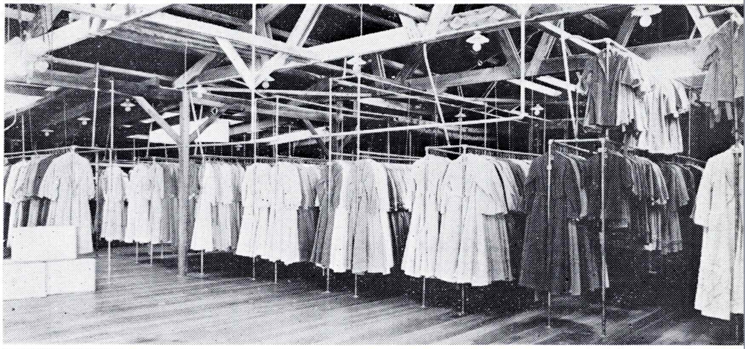
merchandise); to utilise national advertising to back up the output of the manufacturing units and to encourage retailer co-operation with the distributing organisation; to research the market and find out the New Zealand public's preferences, then offer only those types and styles of tufted products that will turn over rapidly in retailer's stores and so ensure good business for the retail trade. Directors and technical staff make frequent visits overseas to ensure that the most up-to-date machines and techniques are immediately available to the industry; also, the latest trends in styling can be presented to the public after being amended by expert designers to suit tastes and conditions in New Zealand.

Photographs reproduced give some indication of the large capital investment in the latest machines, to say nothing of land and buildings. Further large-scale expansion of this unusual enterprise is now under way and even more persons than at present will be employed.

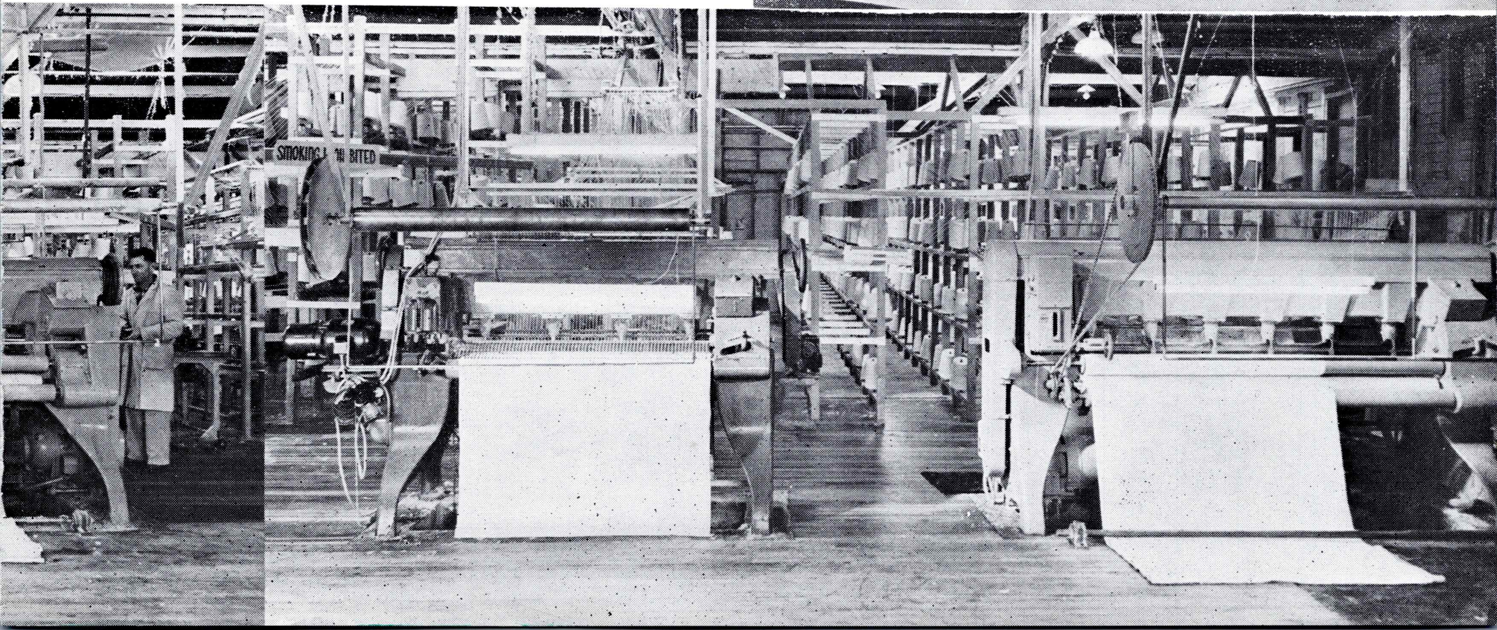
The rights for the use of certain types of machines that are the most efficient for their particular purpose are held by the manufacturing company. This assists in soundly maintaining the continued development of the industry. Obviously, in a small country like ours, duplication of patterns and types by competitors would result in small orders for each, thus increasing costs and likewise selling prices.

The unusually high volume of production per worker is achieved by the use of bonus incentives. Targets are set in such fashion as to achieve a low cost - high quality ratio and yet maintain an outstanding team spirit. This obtains, not only among those working in the factories, but also in respect of those engaged in the distribution of the finished products, right up to top-level management.

The dyeing processes embody the most modern ideas and



All photos: Richards Studios, Marton.



the equipment is extensive and up to date. Items in self colours are made up in the "grey" and then the finished articles are dyed. Allowance is made for shrinkage in dyeing so that the final product will not lose its shape or size however often it is laundered. Where many colours are tufted on to one background colour, much more handling is required. The background colour must be "fixed" so that it will not run into the vat-dyed top colours, when it is later washed in the home.

The different types of tufting machines in use are most interesting as they can be used to obtain an incredible variety of designs. Multi-needle machines are now used to cover thoroughly the calico base-cloth with machined rows of fine tufts, then the desired designs are worked over this close weave with whatever smaller machines are needed to give the elaboration the pattern calls for. These smaller machines are known as "Single Needle," "Five Needle," "Punchwork," "Skip Stitch," "Shag" and so on.

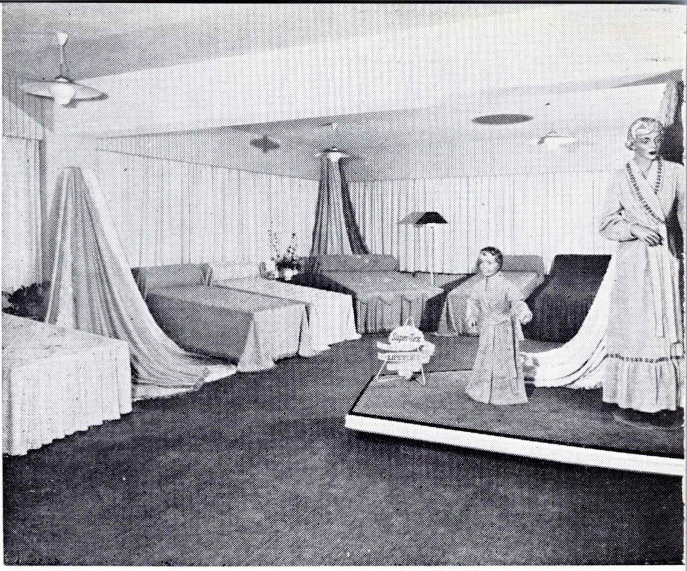
"Single needle" machines were originally the only ones available to do all the work. They had to cover the whole of the calico base-cloth with tufting, one row at a time, which was of course a laborious task for the operators and meant a low output per worker. Today they are mostly used for incorporating portions of the designs and allow most intricate work to be undertaken at a comparatively low cost. Variations of effects are also obtained by using different plies of yarns and yarns of varying colours.

"Punchworking" is done with a very small hand machine, using only two needles which dart in and out as the operator follows the stencilled pattern. She uses a holding frame with the bedspread stretched tightly across it to prevent the part she is working on from slipping. The finished result is a running stitch of tight double loops, which give, after dyeing, the designs so treated an attractive embossed appearance.

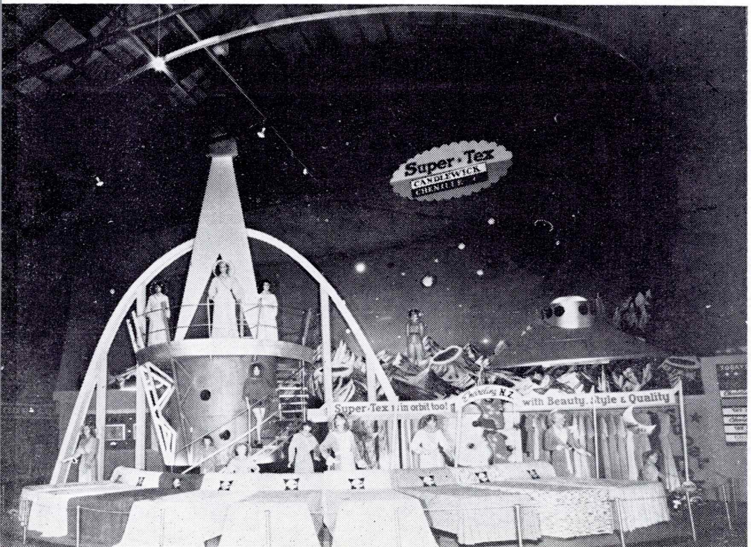
One, two, or three needles, which tuft in one place then skip on to the next, leaving equal spacing between, are operated by "Skipstitch" machines. The separate small groups of tufts resulting play an important part in creating interest and versatility in the better-class type of merchandise.

So it will be seen that a new science has been developed from what began as a simple hand craft by Pacific Chenille Craft Co. Ltd. Thus, under the trade brand "Super-Tex," top value merchandise, styled to suit the special requirements of the New Zealand market, is created by the happy combination of machines and skilful hand crafting.

It is pleasing to be able to claim that no other manufacturer in the world is better equipped to make a more comprehensive range of tufted products and that the merchandise will stand comparison with that produced in any other country.

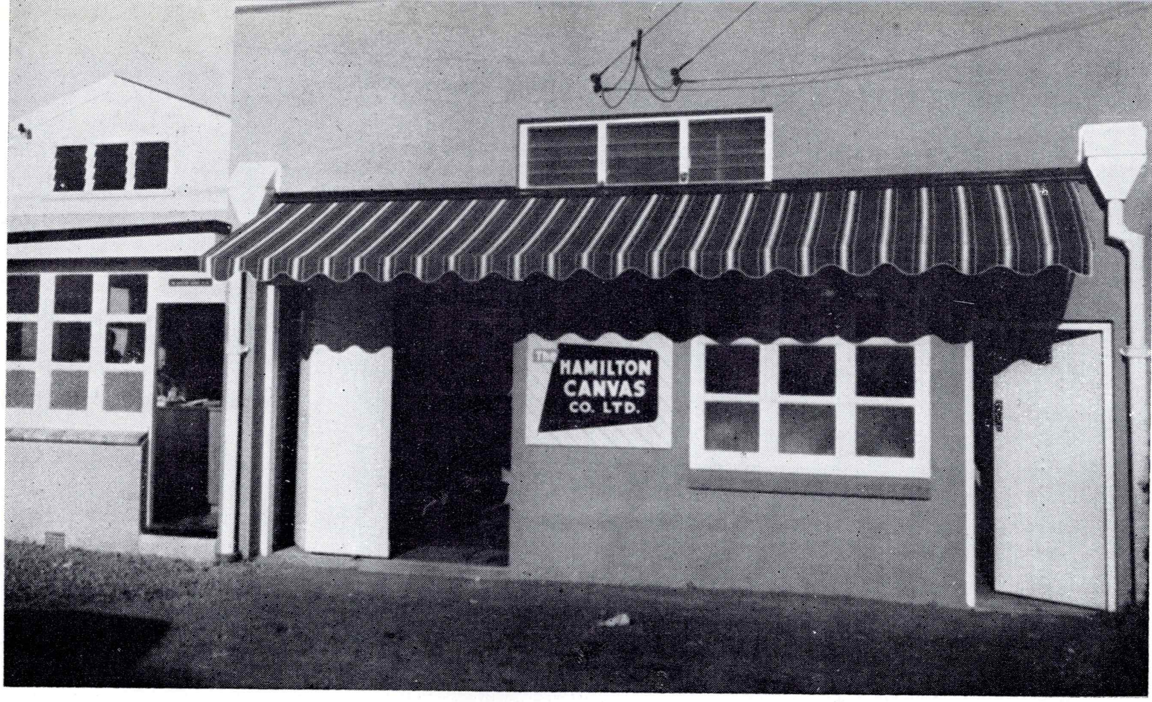


VIEWS OF WELLINGTON SHOWROOM: (Above) Bedspreads; (below) Curtaining and Sheets; (lower) Novel Colour Selector and Dressing Gowns.



'SUPER-TEX' ROCKET AND FLYING SAUCER ON THE MOON: A display of the products of Pacific Chenille Craft Co. Ltd. at the Wellington Industries Fair.

Photos: Jauncey-Filma Studios.



Canvas manufacturing specialists of the Waikato

THE HAMILTON CANVAS COMPANY LIMITED

Kent Street, Frankton

Cessation of hostilities after World War II resulted in a nation-wide upsurge of industrial growth and expansion. Into this new post-war pattern entered the Hamilton Canvas Company, which began production during 1951.

This venture of beginning a specialist Canvas Goods manufacturing business in the area was warranted and is evident from the Company's steady growth and turnover, which has increased almost 400 per cent since the first full year of operation.

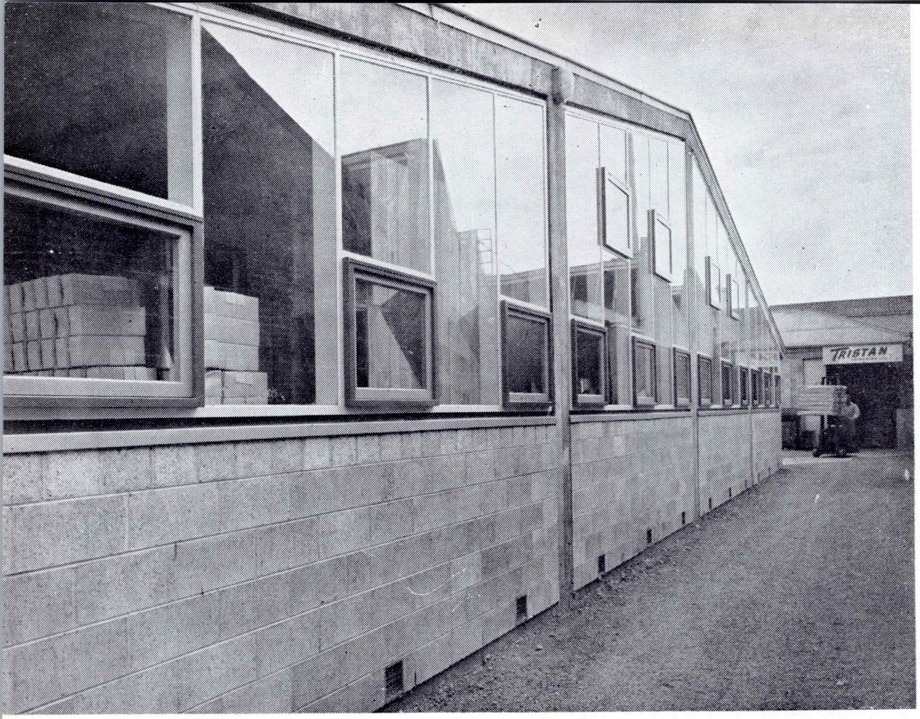
Steady distribution of goods to areas well beyond Hamilton is indicative of the need for this Company's products. Most noticeable has been the demand for canvas goods of all descriptions in the Rotorua and Whakatane districts, and the convenience and speed of delivery from centrally-situated Hamilton has suited these bustling areas.

A wide range of goods manufactured from the best overseas canvas is produced, amounting to dozens of standard types, such as tarpaulins, tents, car covers, trailer, boat and stack covers, awnings, canopies, saw kits, aprons, etc., to hundreds of specialist lines reaching into a great variety of other enterprises. There would be few industries that would not come into contact with canvas at some stage of their operation, and it is this need, even though small at times, that necessitates the Company carrying as comprehensive a range of materials as any like industry in New Zealand.

Basic materials amounting to 20 different types have come from various countries of the British Commonwealth, with the greater part, of course, from the United Kingdom. It has been necessary to use only the best materials available as the demand has been of a selective nature, with great emphasis on quality.

The Hamilton Canvas Company is proud of its association with the manufacturing story of the Waikato and looks forward to developing the type of service and quality this rapidly expanding area demands.

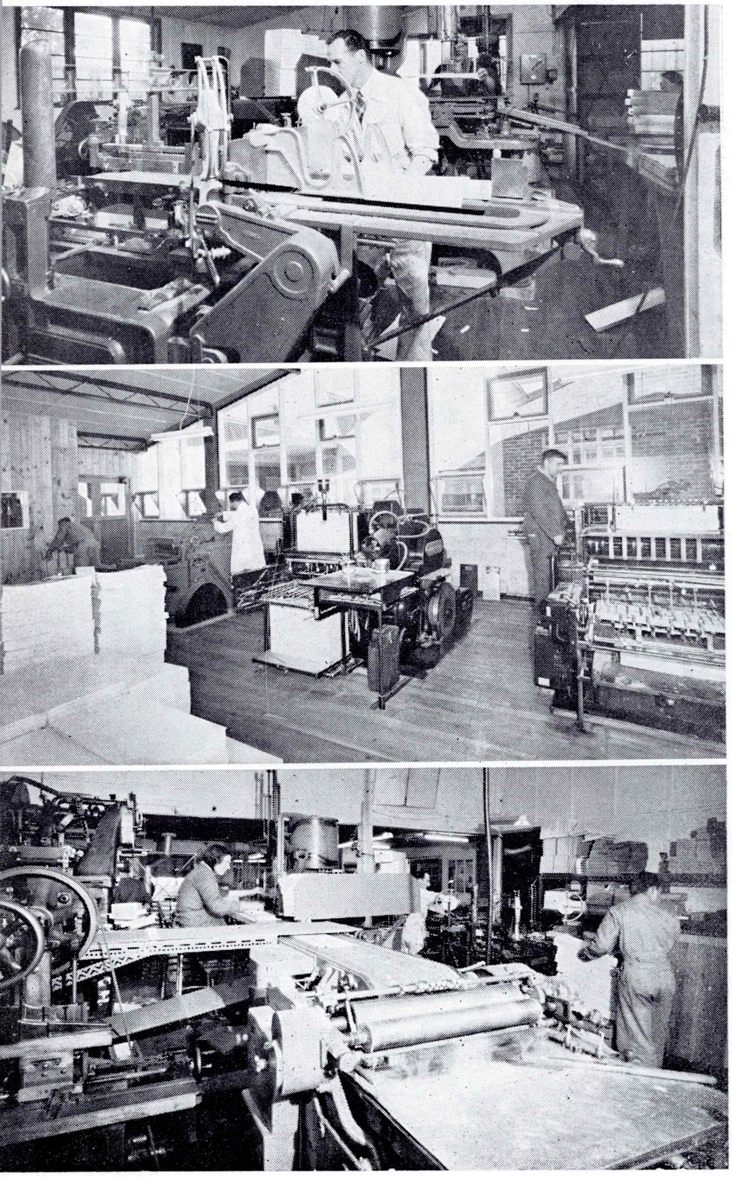
THE FACTORY of Hamilton Canvas Co. Ltd., which manufactures a comprehensive range of canvas goods.



Growth of a young company in packaging and printing

TRISTAN PACKAGING LTD.

217 Moorhouse Avenue
Christchurch



A period of remarkable expansion has been synonymous with the growth of Tristan Packaging Limited, well known colour printers, cardboard box and carton manufacturers. A policy of progressive plant replacement, modernisation and the installation of machinery valued at many thousands of pounds has been adopted and followed through. Plant has been laid out compactly on an assembly line basis to give maximum efficiency and considerable versatility has been achieved in that production can be switched from one line to another with minimum delay. The Company is, therefore, able to deliver a rush order with the greatest possible facility.

The forerunner of the present Company, the Tristan Toy Company, was established in 1939 in a small factory at Riccarton. From this small beginning, under the guidance of the Managing Director, Mr. Leslie Hudson, the Company has prospered and expanded. Toy production has its limitations and resulted in Mr. Hudson deciding to turn to packaging, an industry in which his real interests lay. The woodworking machinery was sold to another firm, but toys, under the trade name "Tristan", are still manufactured.

A private Company, Tristan Packaging Limited, was registered in 1947. Plant included two automatic printing platens, two box stapling machines, and a flat bed printing press converted for cutting creases in boxes. This machinery, all of ancient vintage, was replaced as finance became available.

The present up-to-date factory provides employment for approximately 30 persons and occupies an area of between 6,500 and 7,000 square feet. Plant includes three Heidelberg 21 x 28 inch original cylinder printing presses, a Glockner automatic cutter and creaser platen, an International folding box gluer, three automatic high-speed production wrapping machines for box covering, an automatic quad stayer, an automatic feed Deritend box creaser, a Deritend double header slotter and seven high-speed Vickers stitching machines.

For more than twelve months a double shift has been worked in the printing and carton department. The output of the factory includes about 120,000 shoe, hosiery, clothing and other varying types of boxes per month, as well as many hundreds of thousands of folding cartons. Process colour printing for packaging, showcards and other promotional material is a further feature which enters into this Company's production.

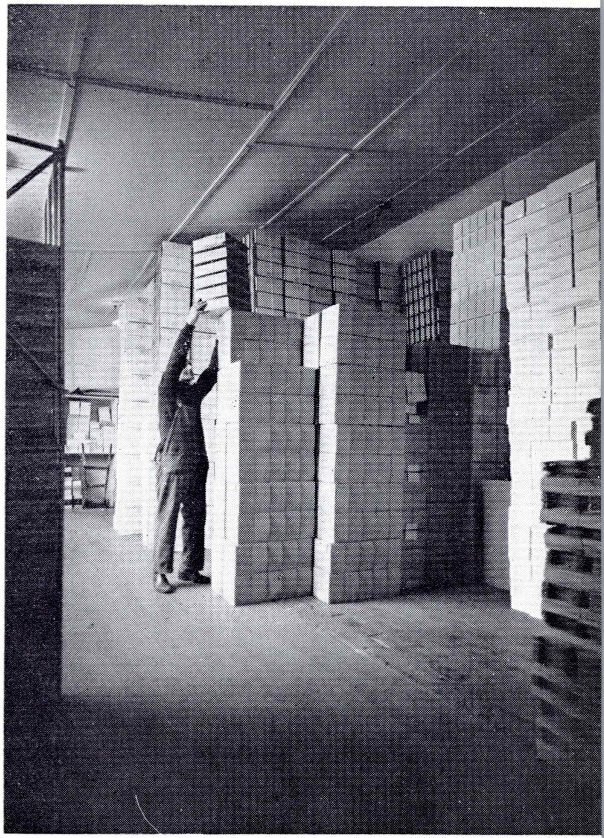
On June 1, 1958, Tristan Packaging Limited took over the cardboard box department of Weeks Limited as a going concern, and plant and stock has been transferred to the Company's premises in Moorhouse Avenue.

In 1958, the Company experienced the biggest expansion in its history — turnover increased by 48½%. The turnover for 1959 is expected to increase beyond 50%.

The increasing importance of attractive, well presented packaging to meet rising competition has become significant to all New Zealand manufacturers and, coincidentally, the future of this Company is assured.

(Left) THESE VIEWS show typical departments of the Tristan factory.

GUILLOTINE OPERATOR trimming cardboard to size.



BOXES being stacked for despatch.

D-

THE PAPER STORE

Photographs: Mannering and Donal

J.GADSDEN & CO. LTD

CHRISTCHURCH FACTORY, opened 1956.

Green & Hahn.

Can-making, bag manufacturing and polythene film extrusion by an old established, vigorous firm with Dominion-wide coverage

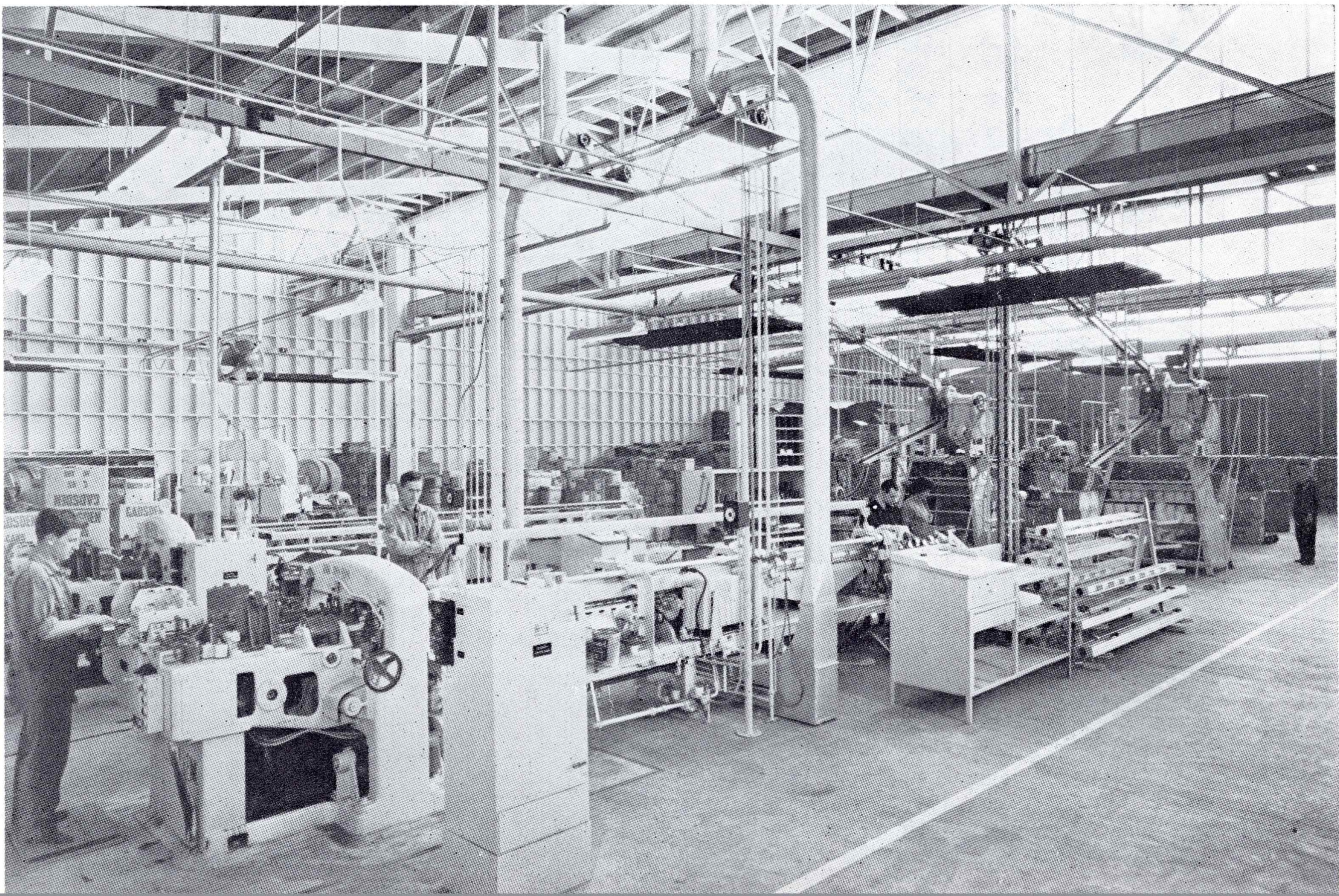
J. GADSDEN & CO LTD

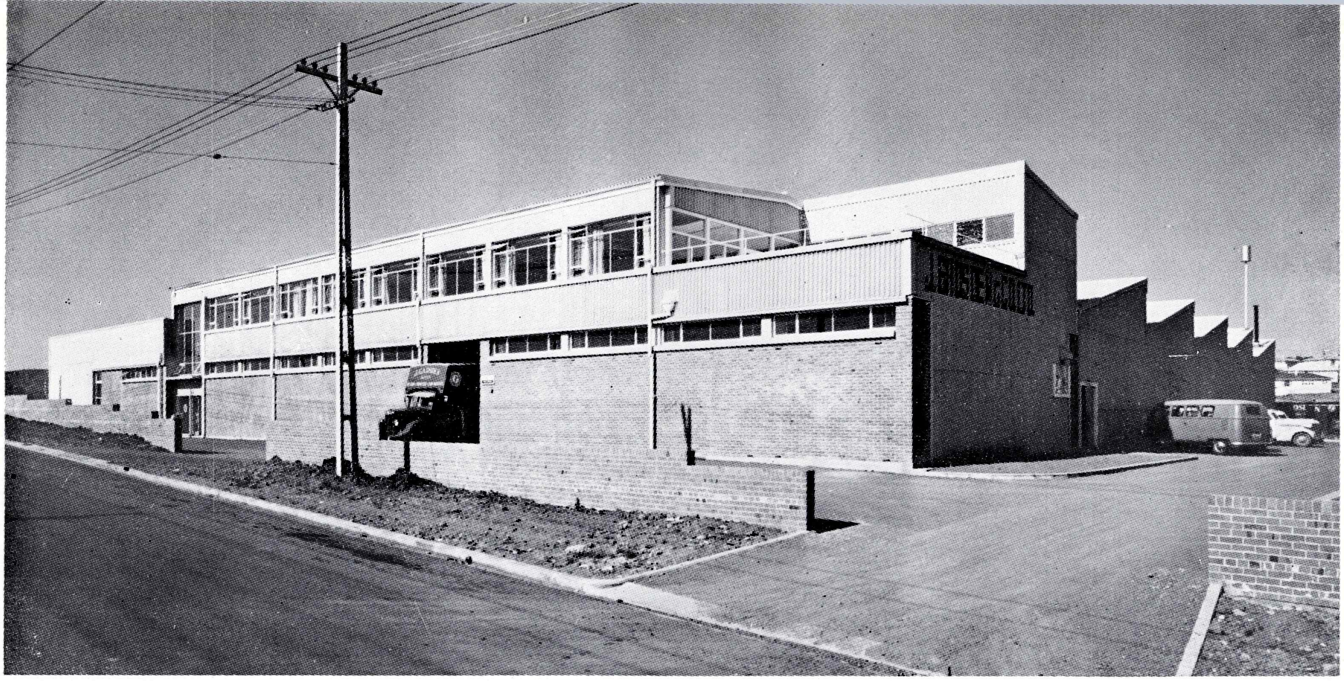
A noteworthy contribution to New Zealand industry has been made over the years by the well-known firm of packaging specialists, J. Gadsden & Co. Ltd.

This Company originated in Melbourne over 70 years ago when its founder, the late Mr Jabez Gadsden, established a factory for the manufacture of calico and hessian bags, adding later what is now the main section of the business, can-making and tinplate printing. Once established, the business expanded rapidly, with the late Mr Stanley W. Gadsden as Governing Director, and latterly under Mr

A SECTION of the Can Shop, Mt. Roskill.

Sparrow Industrial Pictures.





MT. ROSKILL FACTORY, opened 1959.

Sparrow Industrial Pictures.

35-39 Jackson St. Petone *also* Christchurch, Auckland, Dunedin

Norman C. Gadsden, the present Chairman of Directors.

The New Zealand enterprise was commenced in 1918 when Mr Jabez Gadsden opened a calico and hessian bag factory at Lyttelton. It was not long before operations were transferred to Christchurch, where property was purchased in Durham Street near the railway line, and the Company's business was extended to include can making on the same pattern as the development in Australia. In due course, two further branches were opened, one in Auckland and the other in Wellington. The head office of the Company was transferred to Wellington. Some years later, the chain of factories was completed by the establishment of a branch in Dunedin, where the Company took over the older established firms of J. Eustace & Son Ltd. and F. J. Lake Ltd.

In subsequent years, the business expanded rapidly—so much so in Christchurch and Auckland that the premises in these centres became too small for efficient working. In Christchurch a new modern factory of 45,000 square feet was built at the corner of Fitzgerald Avenue and Alfred Street, this building being specially planned on a single floor to suit canister production. It was officially opened by the Chairman of Directors, Mr P. R. M. Hanna, on October 10, 1956. In Auckland, too, a new building of 50,000 square feet has been erected at Stoddard Road, Mt. Roskill, and this was opened on September 3, 1959. With its new buildings and with modernisation of its Dunedin and Petone properties, the Company is providing the facilities necessary to ensure an even greater contribution to industry in New Zealand.

Maintenance of plant and the provision of new machinery where required have always been a major part of the Company's programme and the Auckland factory incorporates facilities for tinprinting which are as efficient and up to date as anything comparable overseas.

The Company's main business as packaging specialists is in the manufacture of tinplate containers. These can be either plain or printed and cover food cans, 4 gallon tins for petrol, oil and kerosene, egg and fruit pulps, cans for paint, polish, confectionery, and a host of other commodities. Screw caps and crown seals are also products of the Company which enjoy wide usage throughout the country.

The original bag-making business is maintained in Christchurch, where the Company manufactures calico and hessian bags for packing flour, breakfast foods, dried milk powder, bacon, seeds and fertiliser, together with stockinette wraps and allied products.

Recently, a new factory was built on the Petone property and a Plastics Division was established. In this factory the Company extrudes polythene film under the brand name "Paxene", and makes and prints polythene bags to supply the ever growing demand for plastic packaging in the Dominion.

To maintain its progressive policy the Company is closely associated with the Gadsden organisation in Australia and with the American Can Company of U.S.A., under technical assistance agreements. This ensures that the most modern trends in packaging and containers are available to the Company's clients here in New Zealand.

In 1950, a public company, J. Gadsden (N.Z.) Ltd., was formed to take over the New Zealand section of the Gadsden interests. The Company is owned by a representative public shareholding therefore, registration being in Wellington.

The public company, J. Gadsden (N.Z.) Ltd., recently increased its authorised capital from £400,000 to £500,000 and made a further share issue of 75,000 5½ per cent cumulative preference shares and 100,000 ordinary shares, 50,000 of the ordinary shares being a bonus issue.

The present executive of the Company is as follows: Board of Directors: Messrs P. R. M. Hanna (Chairman), N. C. Gadsden, R. S. Gadsden, T. W. Perry, H. M. Rogerson, K. K. Watts. General Manager: K. K. Watts. Secretary: E. C. D. Watson.

Branch Managers: Wellington, J. A. Tait (also Assistant General Manager); Auckland, R. A. Pearce; Christchurch: I. Duthie; Dunedin, L. deV. Gilbert; Plastics Division, A. O. Hawkins.

Addresses: Head Office, 35–39 Jackson Street, Petone. Branches: 112–114 Stoddard Road, Mt. Roskill, Auckland; 45–59 Fitzgerald Avenue, Christchurch; 329 Cumberland Street, Dunedin.

New Zealand's largest industrial plant is based on inexhaustible natural resources

TASMAN PULP & PAPER COMPANY LIMITED

Kawerau, Bay of Plenty

Trade ties between Australia and New Zealand have strengthened as a result of the development of Tasman Pulp and Paper Company Limited. More than a third of New Zealand's total income from exports to Australia is derived from exports by the Tasman Company. It may indeed be said that industrial development is tending to make the economies of the two countries complementary. For example, New Zealand benefits from Australia's possession of a strong iron and steel industry, and Australia, in turn, benefits from the growth of industries based on the abundance of softwood resources in New Zealand. In short, the Tasman mill and its supporting natural resources are, as it were, assets shared by the two countries.

Newsprint, woodpulp and timber—three vital commodities in every industrial economy—are manufactured by Tasman Pulp and Paper Company Limited.

Newsprint is a specialised grade of printing paper, which is an economic necessity to the newspaper publishing industry.

Woodpulp is the principal raw material for paper, and is imported by many countries which have a paper-manufacturing industry but lack forest resources.

Timber ranks with masonry, steel and concrete as one of the great building materials, and it is indispensable to manufacturing industry for casemaking and a host of other purposes.

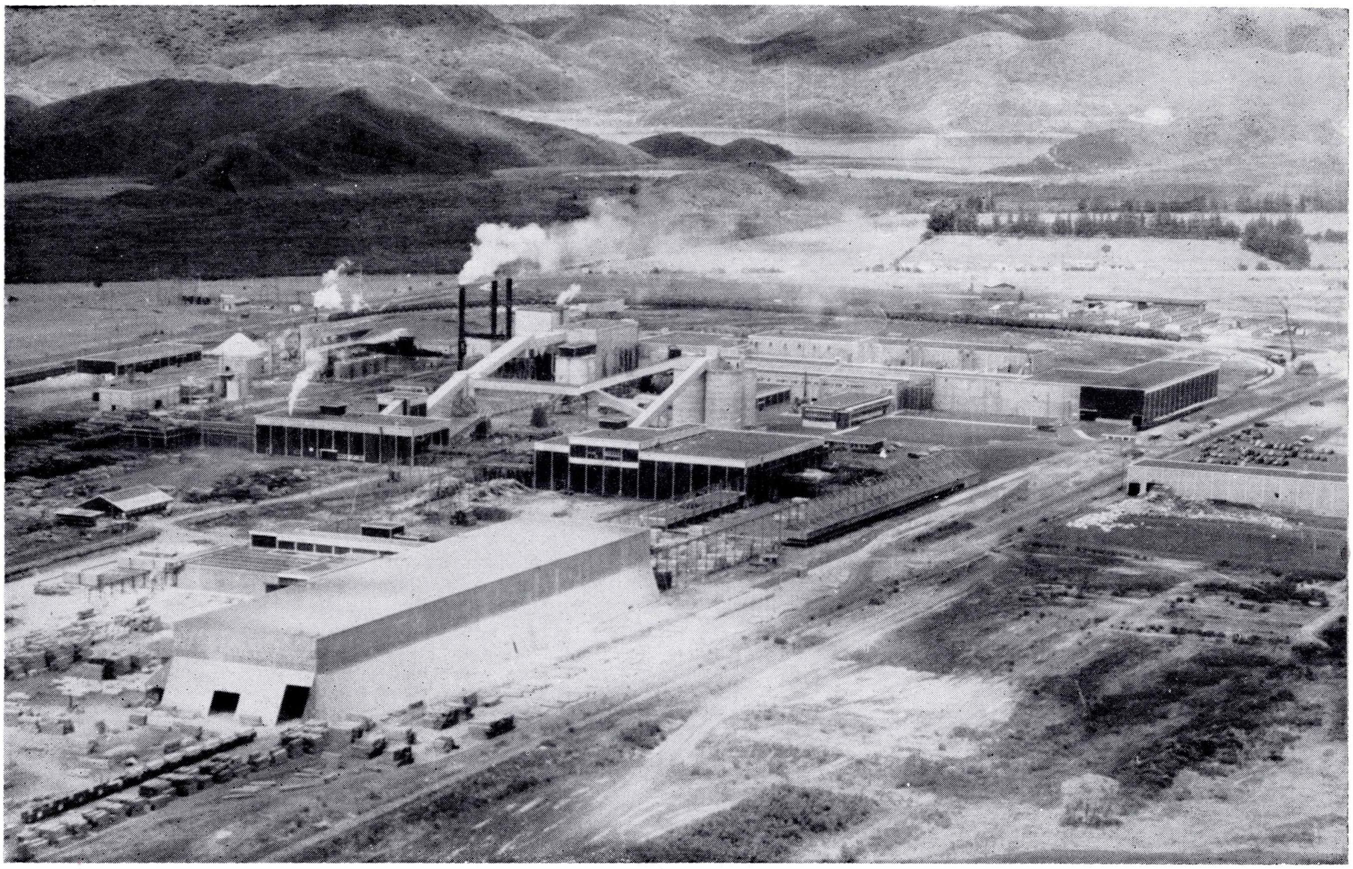
Impressive Outputs

Tasman Pulp and Paper Company's operations are organised on a large scale. All three products are manufactured in the one mill, but each department of this integrated plant is itself a large production unit.

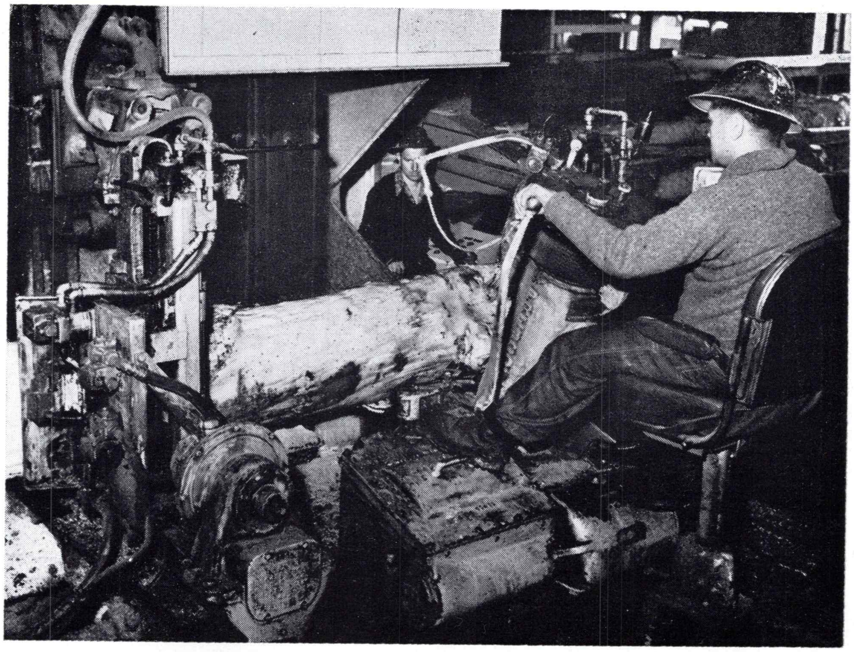
The paper mill, which produces a continuous sheet of newsprint 260 inches wide, has an output of the order of 75,000 long tons per year, the paper machine being one of the largest and fastest in the world.

The mechanical pulp mill produces all of Tasman's requirements of mechanical pulp, which is the main raw material for newsprint production.

The chemical pulp mill has an output of the order of 60,000 tons, part of which is blended with mechanical



THE TASMAN MILL at Kawerau. Newsprint, sulphate pulp and timber mills are integrated to enable profitable use of the whole range of raw material available from the vast Kaingaroa Forest.



A LOG is broken down in the head rig band saw at the Tasman mill. Full mechanisation makes the mill one of the most advanced of its kind in the world.

pulp for newsprint production, and about 40,000 tons is sold to other paper manufacturers.

The current output of the timber mill is of the order of 50 million board feet per year.

Paper Making

A continuous sheet of paper is formed on the paper machine by projecting a flat jet of water containing pulp fibres in suspension on to a fast-moving endless wire screen. On the Tasman machine this flat jet of water is ½ to 1 inch in thickness and about 280 inches wide.

As the pulp suspension is carried along the wire-mesh belt, the water drains away, leaving a wet mat of felted fibres. This wet mat is transferred to the press section of the machine, where water is removed.

As the newly-formed sheet of paper is weak, it is therefore sucked off the wire on to an endless belt of thick wool fabric called a "pick-up felt" and is carried to the press section of the paper machine. The press rolls squeeze out more water, and consolidate the sheet so that it can be fed through the drying cylinders. The paper is then dried by passing it over a series of steam-heated horizontal cylinders. A continuous band of thick cotton fabric, called a "dry felt", holds the paper flat against the cylinders.

Machine Speeds

The dried paper is then wound into a jumbo roll about 23 feet wide and five feet in diameter. Such a roll is too large for any printing machine, and the next step is to cut the large roll into smaller rolls, the largest of these being about six feet wide and 34 inches in diameter, weighing about 14cwt.

The paper machine in the Tasman mill can run at speeds approaching 2,000 feet per minute, and in 24 hours it can produce a sheet of paper nearly as wide as a two-lane highway and long enough to stretch from Auckland to Wellington. The winder on which the large rolls are cut into smaller rolls can run at speeds of up to 6,000 feet per minute.

The entire process from the wire screen to the winding up of the dried paper occupies less than 45 seconds.

An Integrated Industry

Raw material economy is a striking feature of the Tasman plant. It begins with the sharing by the pulp mills and timber mill of a common wood-preparation department. This department has the triple function of preparing logs for the grinders in the mechanical pulp mill, producing chips for the grinders in the chemical pulp mill and selecting logs for the timber mill.

One of the key operations in wood preparation is bark removal. As logs pass through a hydraulic barking machine, jets of water under pressures of 1,200 to 1,500 pounds per square inch strip off the bark.

After this, logs which are judged to contain a good proportion of defect-free timber are chosen for the timber mill, and other logs are cut into short lengths and routed to the grinders or the chippers.

The essential difference between mechanical pulping and chemical pulping lies in the method employed for liberating cellulose fibres for papermaking.

The chemical pulp mill is the less exacting in the material which it can utilise, since the wood is first chipped and then non-cellulose constituents are dissolved out.

The mechanical pulp mill requires logs in short lengths of a convenient shape and size to fit in the grinders, preferably young logs or top logs containing little or no resinous heartwood.

Maximum Recovery

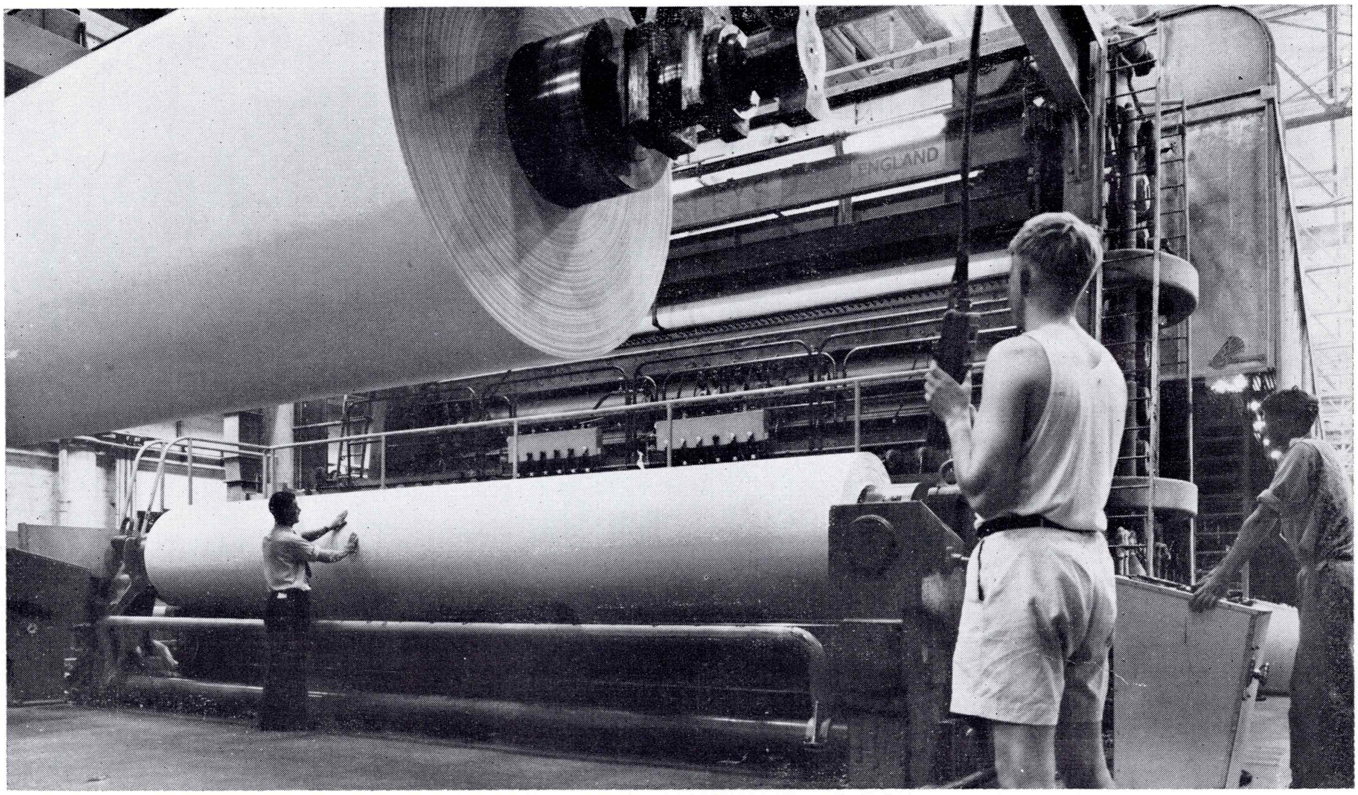
The principle that wood may be converted into pulp fibre or go into timber, whichever is the more profitable, governs operations in the timber mill as well as in the wood-preparation department.

Slabs, offcuts and any timber which fails to meet exacting grade requirements are chipped for the chemical pulp mill.

Recovery and re-use of chemicals and the utilisation of materials dissolved out of wood are important chemical-pulp-mill features.

The chemical pulp mill has a number of ancillary departments—chemical recovery plant, chlorine/caustic soda plant, bleach plant, and pulp-drying machines—and it is closely integrated with the steam plant.

Lignins and other materials extracted from wood in the digestion process are burnt in the recovery boilers, which produce high-pressure steam for power generation and process purposes.



AS ONE ROLL OF NEWSPRINT comes off Tasman's paper machine another forms. The rolls are about 23 feet wide and 5 feet in diameter.

Smelt from the recovery furnace goes to the re-causticising plant where the cooking liquor used in the digestors is reconstituted.

Water and Power

Water plays a vital part in pulp and papermaking, and its conservation and re-use are important in mill economy. The mill takes some 12,000,000 gallons of water daily from the Tarawera River to supply boilers, debark logs, cool grinders, wash pulp, carry pulp to the paper machine and assist in forming the newsprint sheet.

The mill is a heavy user of energy, requiring heat to cook pulp and to dry paper and timber, and requiring power to drive machines. For example, the eight grinders producing mechanical pulp are driven by four 5,500 horse-power electric motors.

Electrical energy is obtained from the national grid and from the mill's own generating plant. Bark, sawdust, and coal are used as fuel in the two main boilers and, as explained above, cooking liquor from the digestors provides fuel for the chemical recovery boiler.

Geothermal steam wells, which have been drilled to depths of more than 1,500 feet on the Company's property at Kawerau, provide a valuable source of heat and a means of producing electricity. Plans for utilising the steam are now being given effect. To produce clean, dry steam for process use in the mill, geothermal steam is to be passed through two heat exchangers; and to produce electricity, geothermal steam is to be used to drive a turbine coupled with an alternating current generator rated at 10,000 kW.

Farming the Forest

The wood for the Tasman mill is drawn from Kaingaroa State Forest, which is fifty miles long and from twelve to twenty miles wide, and contains more than a quarter of a million acres of land under trees. It is composed of radiata pine, Corsican pine, Douglas fir and other species.

Some 200,000 acres of Kaingaroa Forest, taking in the most productive areas, have been demarcated as a working circle to supply the Tasman mill. The New Zealand Forest Service, which is responsible for cultivating the forest and for protecting it from fire and disease, estimates that this working circle can produce a yield of logs in perpetuity amounting to more than 30,000,000 cubic feet a year.

Natural regeneration, together with artificial re-establishment where necessary, replenishes the forest resources year by year. Scientific cultivation of the forest crop will continually improve the yield per acre and the quality of the logs.

Besides undertaking the utilisation of produce from the major State exotic forest, Tasman has furthered the Government policy of conserving the remaining native forests, in so far as it has helped to raise the standards of quality and grading of exotic timber. This has provided an improved material for general building purposes, and has relieved the drain on native softwood resources.

Transportation

Like manufacturing operations, the transportation of raw materials and finished products is organised on a large scale. New Zealand Railways carry logs from Murupara to Kawerau over a 36-mile line which was specially built to serve the Tasman mill.

Five trains a day bring logs down from the forest. Trains weigh 1,000 tons laden, and are drawn by three-unit diesel electric locomotives with 2,250 h.p. motive power.

Twice daily trains carrying Tasman products leave

Kawerau for the port of Mount Maunganui on Tauranga Harbour and for North Island centres.

The Mount Maunganui port, which is capable of taking vessels of 10,000 tons carrying capacity, was constructed to handle both coastal and export shipments of newsprint, woodpulp and timber from the Tasman mill.

Frequent shipments are made, and ships carrying Tasman products sail on an average once a week from Mount Maunganui.

The Finished Products

The quality of Tasman products has secured their ready acceptance on local and export markets. The newsprint is very strong, and its printing properties are good. Strength is a great advantage to publishers who print on high-speed rotary presses. Another advantage of Tasman newsprint is its freedom from damage in transit to customers, as a result of the care taken in wrapping and shipping.

Strength and cleanness are also important properties of the chemical pulp produced by the Tasman Company. Its unbleached sulphate pulp has been favourably received by paper manufacturers in Australia, the United Kingdom and many other countries.

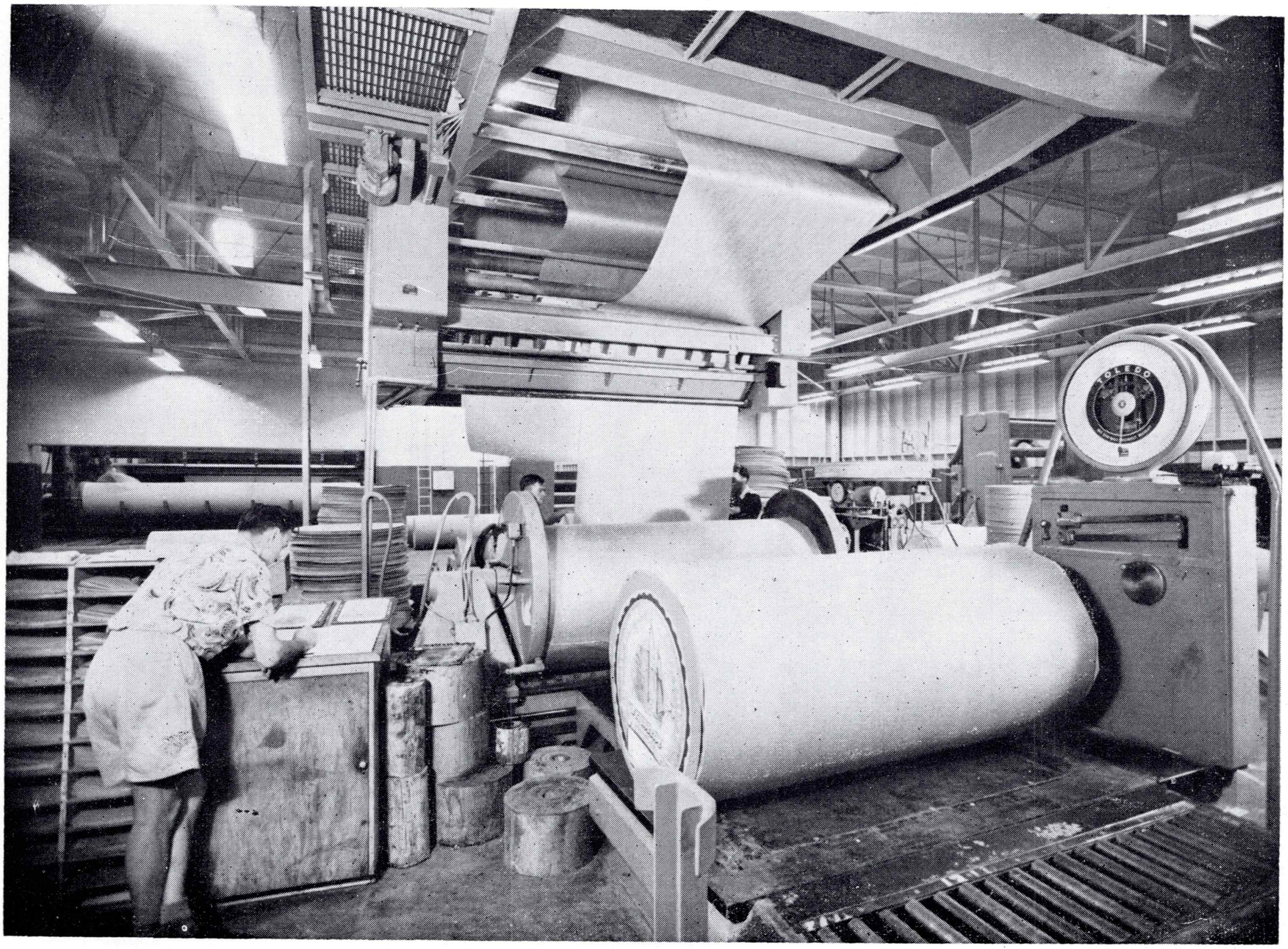
Tasman has introduced a new concept of timber quality into New Zealand.

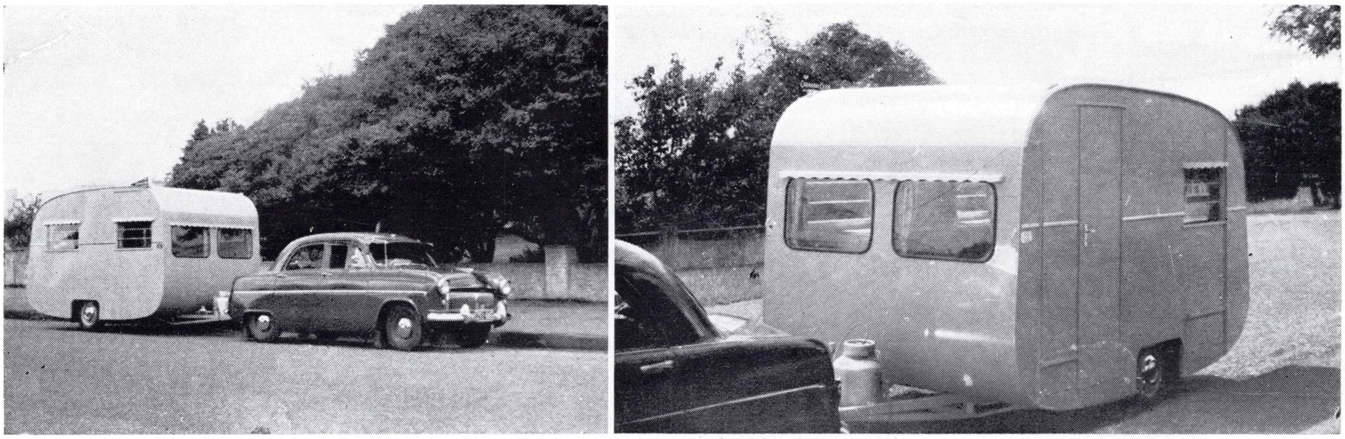
The quality associated with the Tasman brand has a threefold origin: it comes first from selection for natural timber properties, secondly from scientific manufacturing techniques, and thirdly from brand and grade identification, which assist wood users, especially architects and engineers, in specifying their timber requirements.

Export of newsprint, woodpulp and timber has made a valuable addition to New Zealand's overseas earnings, while local production of newsprint makes possible large savings in expenditure on newsprint imports.

The sterling area's balance of payments also benefits by Tasman's contribution to Australian and New Zealand newsprint supplies.

NEWSPRINT wrapped ready for despatch within New Zealand or to Australia. Ships carrying Tasman products sail, on average, once a week from Mount Maunganui.





A TYPICAL CARAVAN from the range made by Gipsy Caravans Ltd.

The Caravan - the 'house on wheels'

GIPSY CARAVANS LTD

11 Oxford Street Levin

For many years there has been a growing recognition of caravaning as an unrivalled means of holiday-making and as an enrichment of life throughout the year. And this upsurge in the demand for such vehicles has been met by Gipsy Caravans Ltd., manufacturers of custombuilt caravans and shells.

In furtherance of its policy of providing caravans to give utmost value to the man of moderate purse, this company has set itself to build a genuinely good product with character and distinction and where the authentic touch of the craftsman remains. Steel chassis, bodywork, interior furniture, upholstery and furnishings are all manufactured in this company's factory and are featured in their 11ft, 12ft, 13ft, 14ft, 15ft, and 16ft stock models and those made to any desired specification.

The building of any type of caravan entails a lot of patience, many hours of precise work and, before any practical work is done, careful thought is given to size and layout. This company has studied and examined all the aspects of trailed uses and the results of its experience has led to vehicles of imposing appearance, unmatched in soundness of construction, superb finish and practical layout and, above all, quality, the essence of all work.

There is no doubt that the Caravan, ever growing in popularity which is a tribute to its usefulness, is destined to play a very important part in our increasingly mobile society and Gipsy Caravans has earned for itself an excellent name for its products.

CROTAN CARAVANS PRODUCTS COMPANY

Backed by 30 years of canvas experience, this associate Company of Gipsy Caravans Ltd. is engaged in the manufacture of awnings, squabs, and caravan accessories.

The Company is the originator of the "boxed in" type caravan awnings. This specialty comprises a proofed canvas roof and a draught strip which runs along the bottom of the caravan, side curtains with frill attached, and a waterproof canvas carry-all bag. Everything is substantial, well made and well finished. The colour schemes available are tasteful and practical. It is easy to erect and light in weight and the total effect is modern and pleasing.

Director of both companies: Mr F. Croot.

A MOBILE SNACK BAR TYPE CARAVAN.

Kiwi SNACK BAR

A firm
which has kept pace
with the growth of
the Dominion

CAMBRIDGE CLOTHING COMPANY LTD.
JOHN BATES (Auck) LTD.
BROOKINGS BOOK

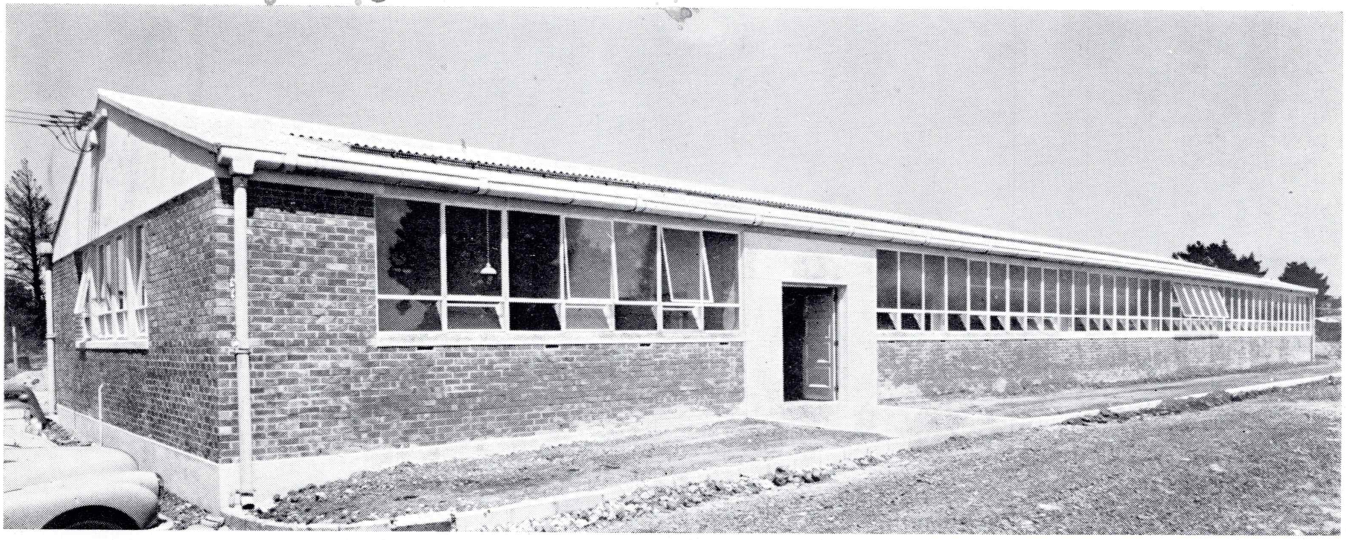
Head office, Auckland.

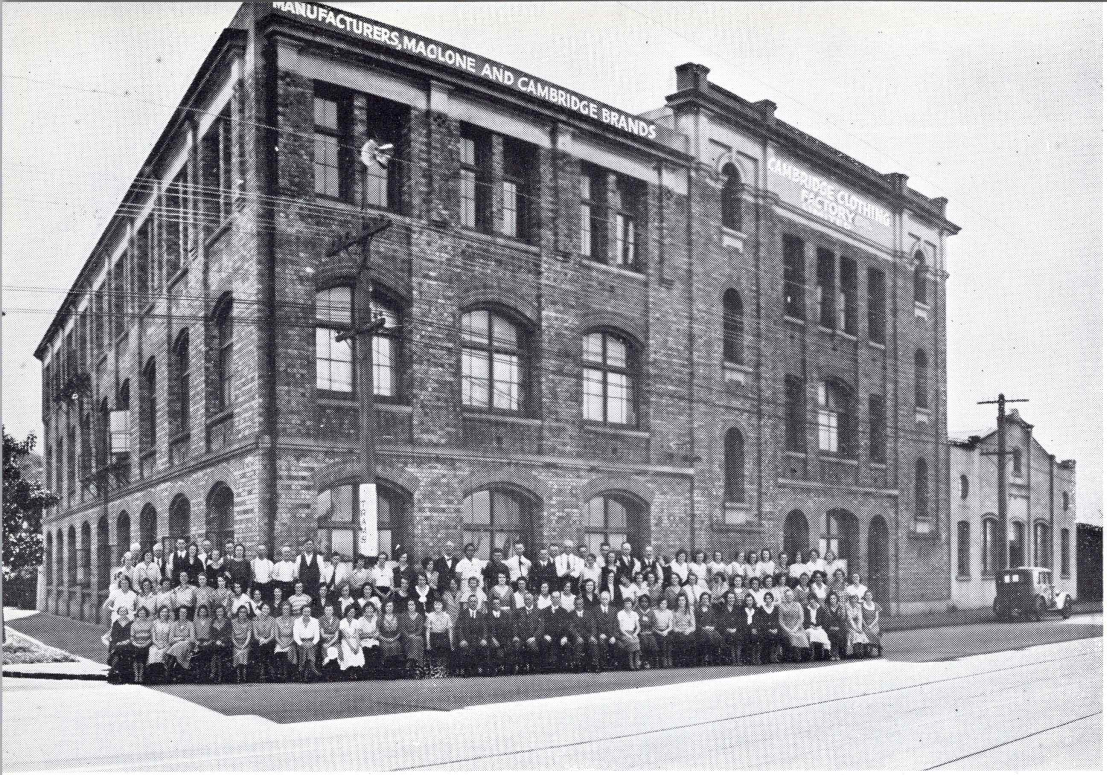
CAMBRIDGE CLOTHING CO LTD

Head Office and Factory: Customs Street, Auckland
Branch Factory: Great North Road, New Lynn

Factory at New Lynn.

—Photos: Sparrow Industrial Pictures.




MANUFACTURERS, MACLONE AND CAMBRIDGE BRANDS
CAMBRIDGE CLOTHING FACTORY

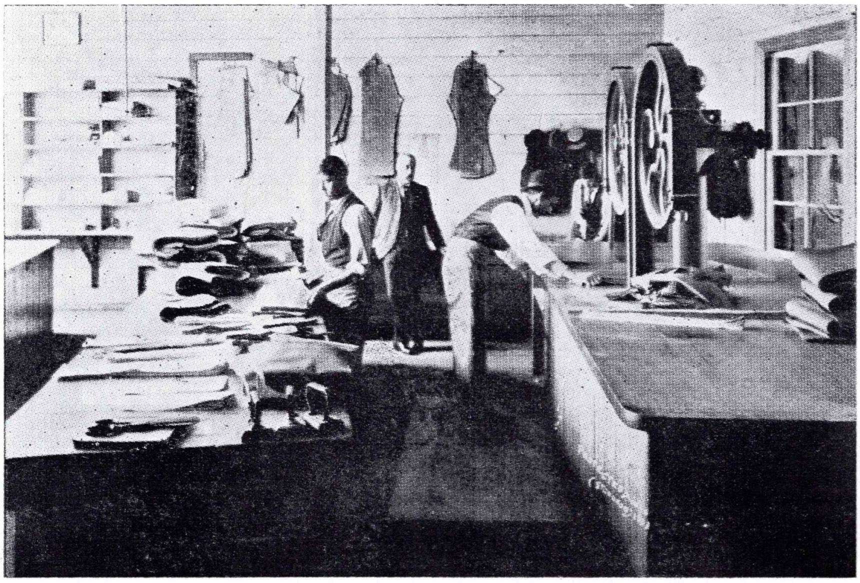
Newmarket premises, 1932.

The old established clothing manufacturing organisation, the Cambridge Clothing Co. Ltd., is situated in the heart of the city of Auckland. The name dates back to 1867 when the business was first established in Shortland Street by Mr van Breda. In 1880 however, Mr G. H. Powley assumed ownership and, in 1892, when the land was bought by the Auckland Club, he erected premises in Victoria Street West, just below the junction with Nelson Street. This factory was well appointed and was one of the most modern in equipment in the Dominion. One hundred and seventy workers were employed at this time and every care was taken in the choice of staff and in providing good working conditions and facilities.

Long before the advent of electricity, individual hand machines powered by two gas engines were used in these workrooms, along with power driven cutting knives and 100 Singer Sewing Machines for which a member of the Macky family held the first New Zealand agency. The factory was run in conjunction with Messrs Macky Logan Steen and Company's warehouse business, which supplied all the materials for making-up and undertook the distribution of the manufactured goods.

Production of suits, hardwearing shirts and denim trousers bearing the "Kauri" label served the pioneers well, and the Company prospered. But with improved living conditions, there was a keen demand for more refined clothing and the "Kauri" label, which had become synonymous with tough outdoor garments, was superseded by the quality brand name of "Cambridge".

At the beginning of the century, this brand applied to shirts and denims, to tents, horse and cow covers and oily canvas coats, as well as to men's suits, overcoats,



CAMBRIDGE FACTORY,
Cutting Department, 1900.

sportswear and working clothes. Each line grew into a business of its own, and expansion from the original factory in Victoria Street led first to additional factories in Eden Terrace, Brown Street and Wakefield Street and, subsequently, all were concentrated in 1917 in the Company's Newmarket premises on the corner of Broadway and Clovernook Road.

Finally, in 1935, the whole organisation was moved to the present site in Customs Street East and production was gradually specialised down to the present output of men's suits and sportswear. It is a far cry from the manufacturing methods and conditions which obtained some eighty or ninety years ago, to that which today exists in the Cambridge Company. It is one of the best known in its field from Kaitaia to Invercargill.

In pursuance of the Company's policy of "only the best", the very latest methods and machines have religiously been adopted and installed. The Company must be ranked among the earliest purchasers in New Zealand of new machinery whenever this has appeared on the market. It is interesting to note that Cambridge still owns an Eastman reciprocating knife which was bought in 1901. Unsuccessful approaches have been made by the makers of this machine for its repurchase for their museum in U.S.A.

Much of the tailoring is done on up-to-the-minute plant, and handwork is consequently reduced to a minimum. Where the latter process is necessary however, all finishing is executed by women experts who have passed through the Company's training centre where aptitude and ability are assessed. Further, top executives are in constant touch with overseas trends for development by the designing and manufacturing departments.

The calibre of the organisation may be gauged from its contribution towards the Second World War effort, when more than 300,000 military garments and essential items of equipment were made for the Armed Forces. The Company was delegated the responsibility as well of training personnel for several other factories and supplying master patterns. Cambridge was undoubtedly one of the mainstays of the clothing industry so vital to the Dominion during those difficult years.

Progress

Against this background, progress was naturally assured. So much so, that in 1955, land was purchased in New Lynn, and in 1957, a new factory was erected covering 6,000 sq.ft. Here trouser production is undertaken and the plant's capacity exceeds 1,500 pairs per week. The factory is so designed that an uninterrupted flow of work is ensured. Cutting benches, machines and finishing sections run along the length of the walls and across the bottom of the main floor in the shape of a large U. A single overhead electric conduit carries the main power supply. Underground tunnels deliver steam from the boiler-room to pressing machines. Finally, a maximum amount of natural light imparts a pleasant effect conducive to ideal working conditions.

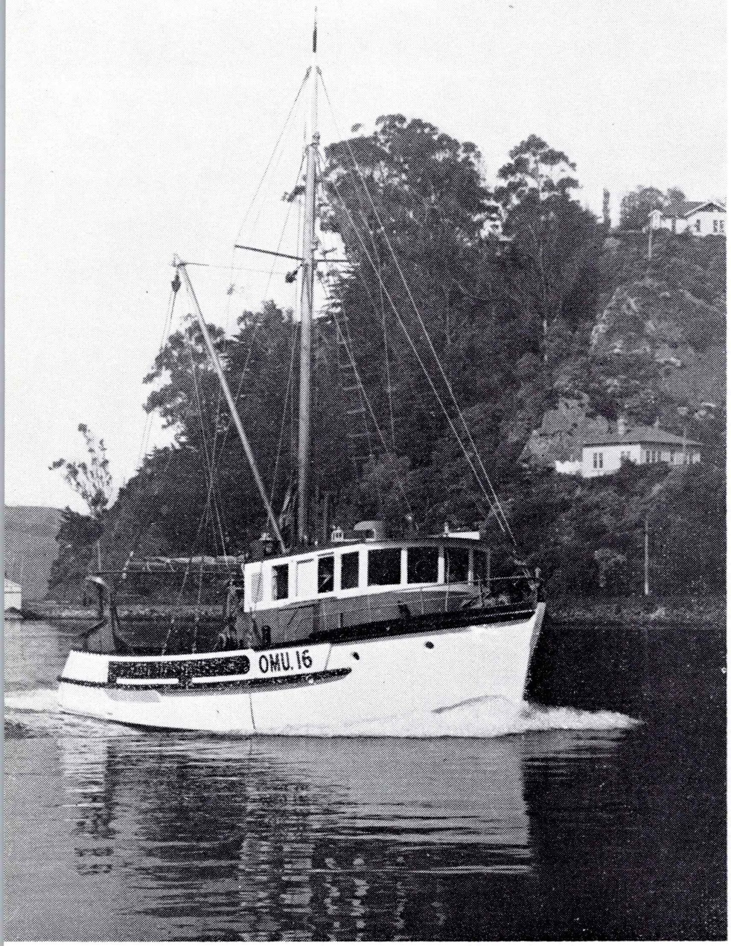
This smaller factory building is the forerunner of a much larger one of up to 45,000 sq.ft. which is now being planned and where, eventually, the whole of the Company's operations will be centralised.

This recent development is a further pointer to the way in which this organisation has kept abreast of the growth of secondary industry within New Zealand. In the early days of the Colony, the firm manufactured commodities for an ever growing primary need. But today, the pattern of the country's progress is reflected in the different types of clothing — men's suits, overcoats, sportswear and raincoats — which are representative of the Cambridge Clothing Company's production.

Directorate: T. H. Macky (chairman), D. G. Macky (manager), R. W. Steel, J. B. Stewart, H. T. Jellie (secretary).

Inside the modern factory at New Lynn where production capacity is 1500 men's trousers per week.

—Photos: Sparrow Industrial Pictures.



Designing and Building Boats

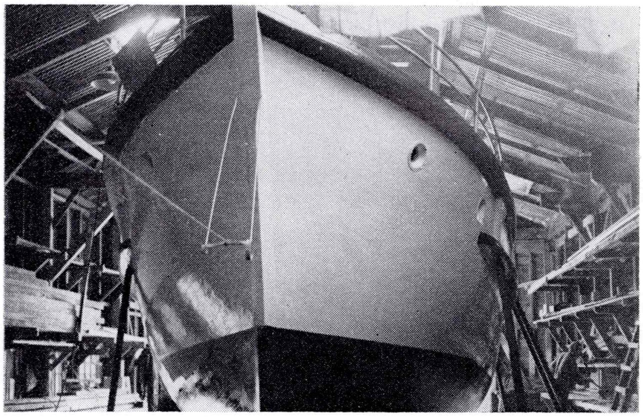
MILLER & TUNNAGE LTD

Port Chalmers, Dunedin

Boatbuilding is satisfying work, according to the men who work in the yards of Miller & Tunnage Ltd., Port Chalmers. It is really creative work, and a boat is something that lives — it moves around, its contest is with the elements. It may spend itself in the waters where is was launched, or it may sail many thousands of miles to many places.

In the yards at Port Chalmers, methods of building boats have not changed greatly over the years, and some of the techniques in use are infinitely older than the group of men who employ them. Many of the methods employed have been developed through force of circumstances. In Port Chalmers logs weighing a ton or more are squared up with a modern razor-sharp variation of the Maori's greenstone adze or the broad axe used in Northland's kauri forests in the early days. Recently, a workman trimmed off with an adze a piece of Australian hardwood 50 ft. long.

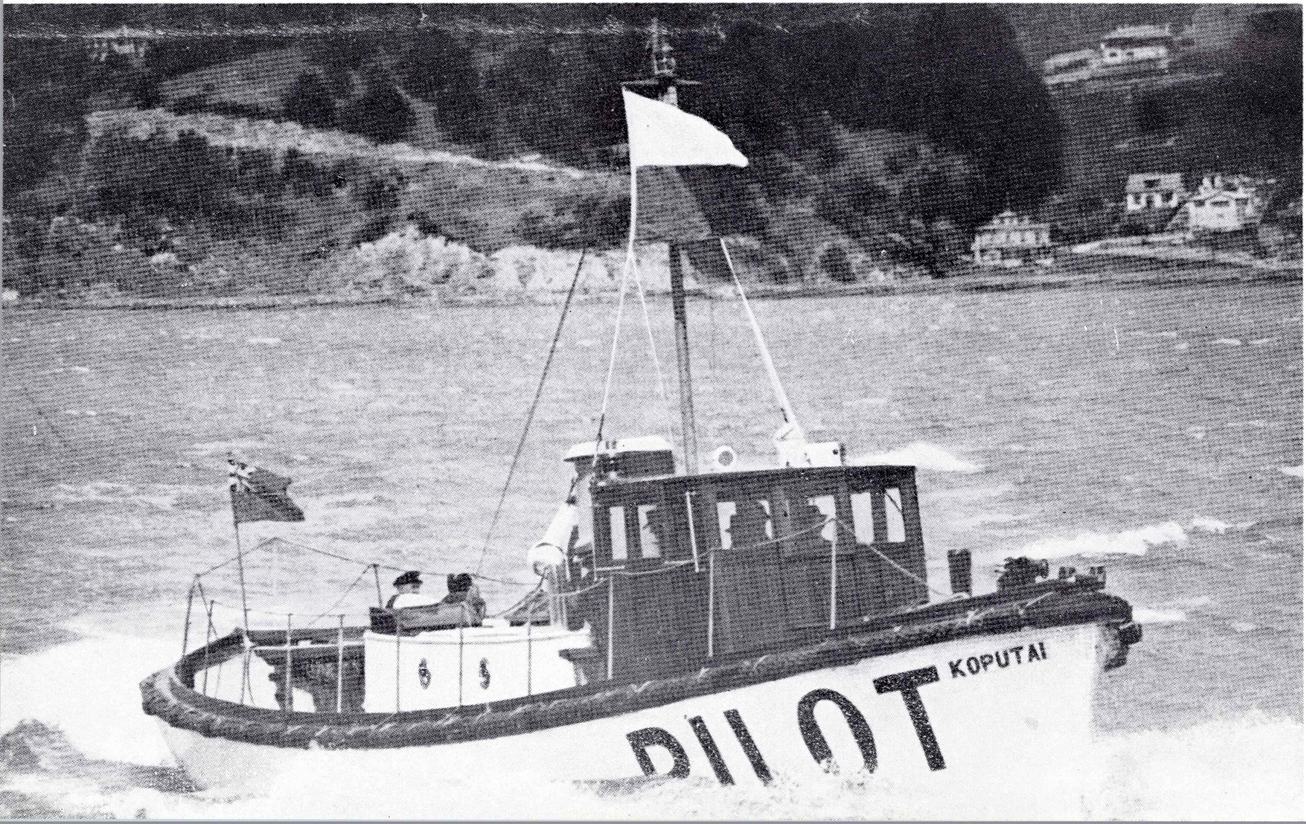
Since 1941, 26 wooden boats over 25 ft. long have been launched at Port Chalmers, the largest being the 72 ft. Bluff oyster dredge Ariel, in January, 1953.



THE FISHING VESSEL 'VENTURE', built for the Fisheries section of the National Mortgage & Agency Co. (N.Z.) Ltd. Length, 45 ft.

(Right) **A COMPLETED FISHING VESSEL** almost ready for launching.

55 ft. **PILOT LAUNCH 'KOPUTAI'**, built for the Otago Harbour Board.



Shoes that FIT the broad, long feet of the nation's young people

McKINLAY'S FOOTWEAR CO LTD

16-20 Filleul Street, Dunedin

Though shoe making has now become a tradition for the McKinlay name in N.Z., it is known that for the founder of the company, Mr R. McKinlay, who began operations in 1874, this was a new venture in a new country. Mr McKinlay had been a civil servant in Scotland and the adventurous spirit which brought him to a new land was to be the spur to launch him into a new industry.

Today, the manufacturing business established in the pioneer days is carried on by the third generation — Mr N. D. McKinlay, who is responsible for general merchandising and management, and Mr H. O. McKinlay, who supervises factory production.

Although, since the factory began nearly a century ago it has produced a varied range of boots and shoes — and during the War large quantities of leather clothing were manufactured for the Army — today the plant is devoted almost exclusively to the production of children's footwear made by the thread-lasted and slip-lasted processes.

In this field it is possible to conceive the special interest McKinlays have in making shoes that fit the feet of New Zealand children. Discussion with manufacturers and health authorities reveals that rather a special technique is required. This may appear rather an obvious statement, but the facts are that the special climatic and economic conditions prevailing in the country mean that shoes made here to fit the norm for age of New Zealand children are larger and broader than those made overseas to fit European children of the same age groups. An instance of this is seen in the long temperate summers which encourage most children to discard shoes for the greater part of the week during summer months. This is not for economic reasons, but rather that the untrammeled agility and foot freedom, as well as being a heritage of the N.Z. way of life, do not carry the social stigma that the unshod child does in older countries, and that here the countryside and urban districts do not carry the menace of snake-bite, jiggers or foot-borne infection so common in many countries.

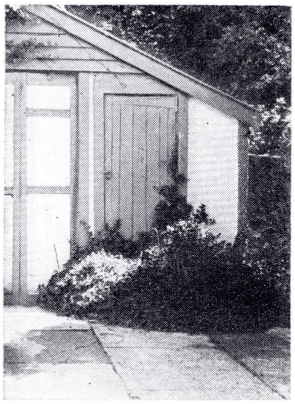
However, this makes for a different foot formation than that the average overseas manufacturer is called upon to supply. Thus it is that the wide surveys and foot measurements of the New Zealand manufacturer of children's shoes facilitate the construction of a suitable and unconstricting shoe. The wearing of such a shoe pays handsomely in national health in future years.

The cost of footwear for children is a matter of despair for all parents; but wrongly shaped shoe lasts may contribute to this cost also, since a correctly shaped shoe may be fitted slightly over-size so that it will remain comfortable for a longer period. It has been pointed out that a child's foot may grow over a quarter of an inch longer during the period of the school holidays.

These sidelights regarding shoe lasts reveal some of the apparent human interest which is a characteristic of McKinlay's Footwear Co. Ltd.

A recent visitor from overseas considered the atmosphere of the factory of unusual quiet and congeniality in comparison with those of other countries. Indeed, the lighting and interior decoration indicate that here is a factory that takes into consideration the people who make the shoes, as well as those for whom the shoes are made.

Recently, both men's and women's staff rooms have been decorated, and, especially in the latter, there prevails an atmosphere more usually found in a home, rather than that adjacent to the not-so-romantic making of footwear. The range of boys' and girls', maids' and youths' footwear made at McKinlays is from size 7 up to 9, 10 to 13, and 1 and 2, 3 to 7. The general impression of this factory is one of compact size making a product of which it can be proud, with the management looking to the future confidently and placing, perhaps before more showy attainments, the continuation both of research and production of shoes designed for New Zealand children, and the conduct of good human relationships with both operatives and customers.



BACKYARD GARAGE, which Barry McKay used as a darkroom.

BARRY McKAY INDUSTRIAL PHOTOGRAPHY LTD

26A Albert Street
Auckland

Industrial photography has many and varied uses, coupled with interesting problems. Take the case of Mrs. Neu Rotic permanently crippled as a result of a fall through her bedroom window. She claims her husband pushed her, and photographs are required to show the scene of this unfortunate occurrence. Perhaps, a client phones: 'You've heard of pigs that fly, no doubt? Fly some over the Auckland Harbour Bridge. Could you let me have a print of this, without fail, tomorrow?'

In all seriousness then, there is the routine work of photographing machinery and general merchandise and, by no means least, technical photography of a nature depicting industry at work, its buildings and location. Industrial photography, being complementary to the publishing business, has made a public relations volume of this very nature possible.

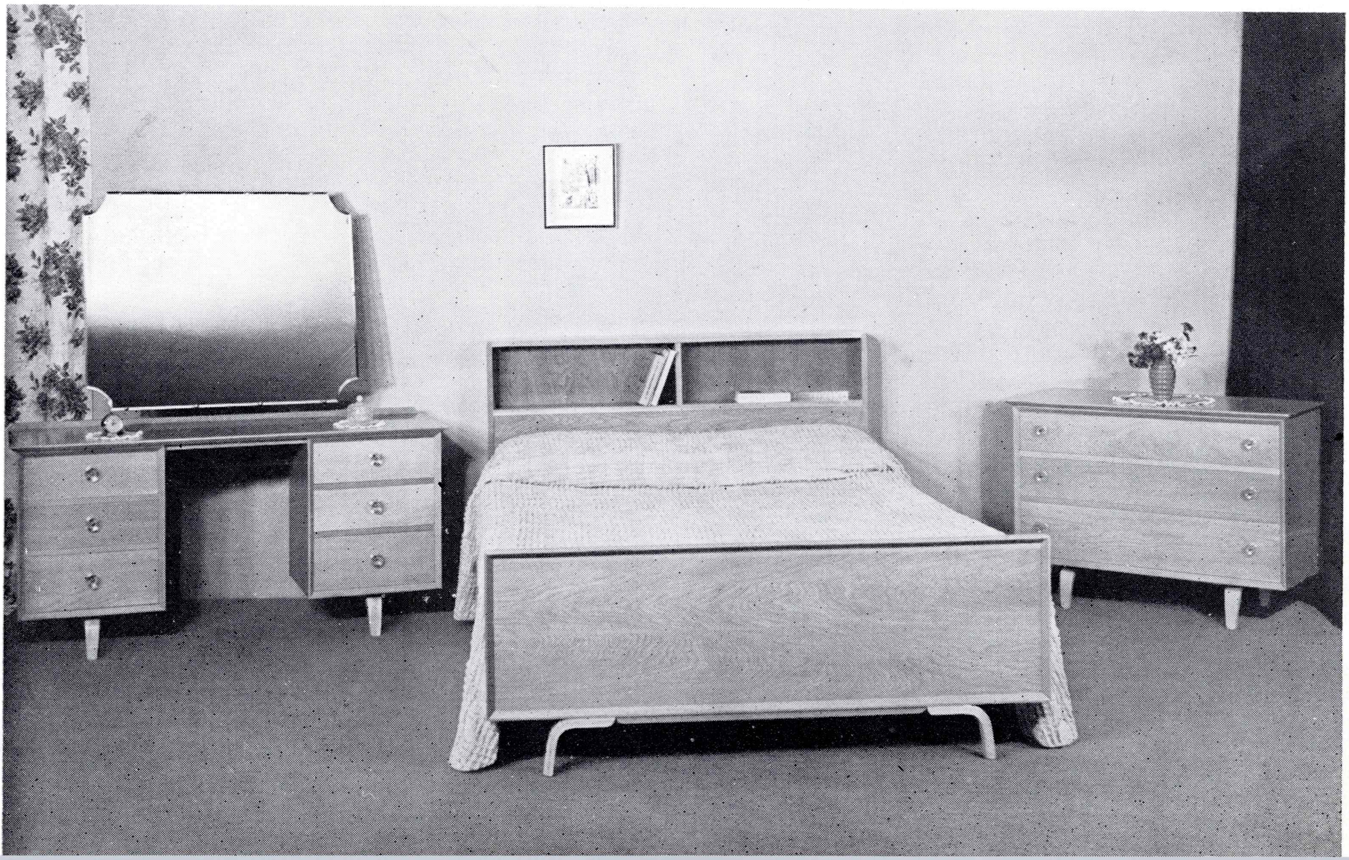
By means of new techniques, special applications, the very latest equipment and a highly trained technical staff, this young Company has been able to attain the most exacting standards demanded of this versatile field. Registering of architect's perspectives and models, progressive developing of sites and buildings prior to construction, alterations or renovations; methods of construction and materials used; interior fitments and installations; mounting; transparency viewers; albums; giant enlargements; montages for display and mural work; artwork; retouching and airbrush work in preparation for blockmaking are but some of the functions and services offered by this organisation.

Growth and Development

Barry McKay established the Company in February 1954, starting from very humble beginnings. This amounted to a small backyard darkroom of 50 square feet with just the essential equipment necessary to produce first class work. Equipment included one enlarger, two cameras, one print dryer, some small but essential items and, coupled with this, 100 hours per week of real hard graft. His primary aim at the outset was to offer quality and service. Today, even to a greater degree than was originally possible, that same sound policy is the motivating influence behind the firm's activities.

During the latter part of the first year in business, a move was made to a city premises of some 400 square feet. Early in 1955, Mr Nigel Beattie joined the Company and there followed a period of consolidating the business. Of recent years, there has been a spectacular de-

A PHOTOGRAPH typical of the many hundreds taken by Barry McKay Industrial Photography in the Company's modern, spacious studio.



THE CREDIT LINE
OF THESE FASHION PHOTOGRAPHS:
Barry McKay Industrial Photography Ltd.

mand for colour industrial photography and, in 1957, the partnership applied itself to this field. Quite naturally, as with overseas industry, it has been adopted in New Zealand.

Production problems are much more significant in colour photography than with black and white. Colour is subjected to a greater variety of processes, and the latitude in processing is not as great. Assessing the time factor for a completed job is a difficult one. However, this organisation has resorted to the use of specialised equipment such as thermostatically- and voltage-controlled units to assist production and efficiency.

The negative-positive Ferraniacolor process is used by the McKay organisation. All materials are obtained from overseas and availability depends entirely upon the licence allocated by the Government. Supplies at the moment are sufficient for the present turnover, but further expansion will necessitate obtaining an increase in licence.

Shortly after entering the colour field, the Swanson Street premises proved inadequate. The two processes, the black and white photography section and the colour plant, were decentralised until such time as a 2,000 square feet premises was leased. Further space has since been acquired and set aside for a studio. The present layout consists of three offices, art room, workroom, models' powder room, studio, copy room, and nine dark rooms (one set up especially for giant enlargements), four dark rooms for colour, and the remainder for black and white film and print processing.

At present a staff of ten is employed. A German technician will shortly join the colour department, now under Mr Nigel Beattie whose projected 1960 trip to the Continent will bring him in contact with the latest developments of the colour laboratories there. Mr Neil Draper, well-known commercial artist and photographer, particularly in portrait and fashion work, handles the preparation and layout of catalogue, magazine and newspaper advertising.

A Well Appointed Studio

An outstanding achievement of the Company has been to establish a really well equipped and appointed studio of some 1,200 square feet. It is a complete and ideal model room suitable for photographing furniture and home appliances, and a host of products including machinery and other equipment. An essential feature and facility allows trucks to move directly into the studio for unloading and loading purposes. Fashion photography is also catered for in this studio and mannequins' powder and changing rooms have been provided—an amenity which has, undoubtedly, had a salutary effect on the finished photograph.

Industrial photography, unquestionably, is an unfailing tool in the hands of experts whose skill and reliable authority have made possible the recording of the significant advance and development of New Zealand's secondary industry of the mid-20th century.

Products backed by quality and fine workmanship

EIDE & COMPANY LTD, Wanganui

Showroom: 192 Victoria Avenue Factory: 79 Ingestre Street

Vacation bound? Perhaps it might do well to take stock of a Company which has served New Zealand well for almost 40 years and is renowned as the maker of the famous “Eidex” Centrepoleless Tents.

Back in 1921, a Norwegian named Oscar Eide came to live in Wanganui. He was a colourful character and a sailmaker who had served his time on sailing vessels in the 1890 s. Since canvas was his trade, on arrival he started to manufacture tents, tarpaulins, cow covers, etc., and thus laid the foundation of the original firm of O. Eide and Co. Ltd.

The Company was reformed in 1926 and, two years later, patented the first tent without a centre pole, which has become known throughout New Zealand as the “Eidex” Centrepoleless Tent. The Company survived the depression of the 1930s and expanded, until in 1937, arrangements were made to manufacture the “Eidex” tent in Australia and England. Meanwhile, Mr. Eide's son patented the product in the U.S.A.

During the Second World War, the Company turned to war production and, with a staff of over 50 machinists, engaged upon work for the New Zealand and American forces until cessation of hostilities. It was during this period that the business was consolidated, and a new company was formed, with Mr. Eide as Managing Director. Unfortunately, he died just before the end of the war. The firm was then taken over by Mr. A. M. Brown, who had been connected with the Company for 17 years prior to the death of the founder.

In 1951, Mr. D. W. Young joined the firm, which then commenced the manufacture of Waterproofed Clothing, in conjunction with the tent and canvas trade. Business expanded, so much so, that, in 1955, Mr. W. K. Backhouse was invited to join the Company as Manager, giving Mr. Young time to concentrate on the manufacturing side. Again, in that same year, the Company was reformed, and the new Directorate consisted of Messrs. W. G. Seabrook (Chairman), W. K. Backhouse (Manager), D. W. Young (Factory Manager) and A. M. Brown (Secretary). Under their direction, the Company has continued to expand in the manufacturing, importing, wholesaling and retail fields. Annual returns between the years 1956-1959 have steadily increased and have exceeded any previous totals. The volume of business has increased to such a degree that a new factory of twice the original floor area was purchased in 1957. Just on two years have elapsed and new plans have been drawn for extensive additions which will double the existing factory floor area.

Company reorganisation has resulted in several changes. The present Managing Director is Mr. W. K. Backhouse. Designing and production planning in the factory is controlled by Mr. D. W. Young, while the cutting and staff management is handled by the assistant factory Manager, Mr. R. K. Young. The retail shop has been made a separate part of the Company and, under the management of Mr. R. H. Seabrook, is now the leading sports and camping showroom in Wanganui.

Range of Products

Eidex centrepoleless tents can be seen in every camping ground in New Zealand, being recognised by the camping fraternity as one of the finest tents ever produced. In fact, the peak of perfection in tents and their guarantee to the last stitch has earmarked this Company as the manufacturers of quality in anything in canvas.

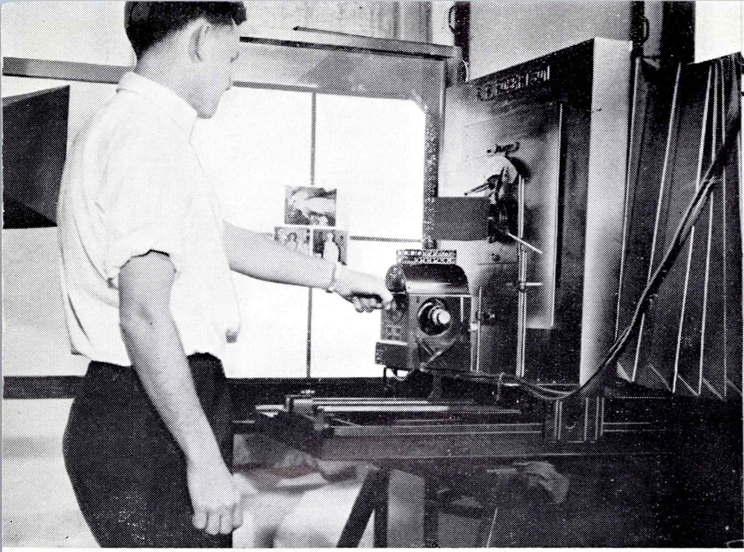
With the development of the Eidex Super Campmaster Tents, a new era of comfort in camping was ushered in. Manufactured from 12 oz. Birkmyre water- and rot-proofed canvas, in a single or combination of 3 standard colours, this centre-pole-less designed tent has its roof supported by rafters, dispensing thereby with the old-fashioned centre pole. Consequently, every square foot of ground area available is usable for comfortable living space. The light-weight rafters are spring-loaded, automatically giving the correct tension in all weathers. From time to time, extension units may be fitted and this can be effected through the use of hooks and eyes, or sewn directly on to the original. The roof of the tent is strongly reinforced with webbing and houses a ventilator and a roped eave with a 2 inch overhang. The distinct advantage of this design is that it has no cumbersome centre pole, fewer guy ropes and a self-stabilizing roof and, all in all, its erection is made possible for one man to undertake in a matter of minutes.

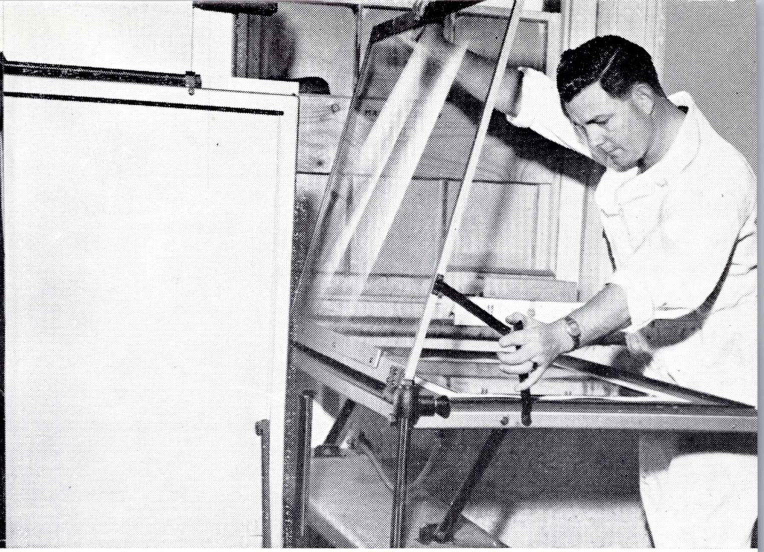
The Company's Ridgepole Tent has proved to be the best all-round tent and has made it acceptable and extensively used by the Ministry of Works, scrub cutters, deer cullers and farmers.

The label “Eidex” is well known on all types of waterproofed clothing. Children's school raincoats are in use all over New Zealand and the product enjoys a good reputation for its ability to stand hard wear, yet retaining its waterproof qualities and appearance. The Eidex Parka is another popular garment with sterling qualities, being well known for its lightness and durability. Apart from being used extensively by deerstalkers, hikers, skiers, etc., it is gaining favour with farmers, truck drivers and cyclists, and large quantities are exported to Australia annually.

Eide & Co. Ltd. has undoubtedly, with a range of camping, tramping and alpine requirements, contributed greatly to the success and comfort of outdoor life.

MACHINISTS AT WORK in part of the Company's factory, Wanganui.





The Art of Photo-engraving — How a Printing Block is made

M. H. PHOTO ENGRAVING LTD

40-42 St Paul Street
Auckland

The Chinese printed from wood blocks as early as 868 A.D. Today, the production of printing blocks (or plates) is based upon scientific principles involving optics, chemistry, mathematics, art, and the specialised skills of trained and experienced tradesmen.

What is photo-engraving? In the simplest terms, it is the production of metallic and other surfaces for printing purposes from drawings, photographs, etc.

Photograph (top left) shows the first mechanical stage in the production of the block. Here the operator is setting the lens to obtain a negative of the required size. This is an 'image reversing' camera, as the finished block to print correctly must be the reverse of the photograph, and the negative is used to print on metal in the same way as a photographer prints on paper.

The photo-engraver has a large printing frame (top right), much larger than a photographer. Here the film and the zinc plate are placed in contact in a vacuum frame and exposed to a strong arc light for an average of about 10 minutes. Afterwards the plate is dyed and baked, a process which changes the coating on the zinc to an acid resistant enamel. By hand, the plate is retouched and altered where necessary with an acid resistant paint, after which it goes to the etching machine (lower left). Etching is the process in which unwanted portions are eaten away by acid to give high spots and low spots. There are three basic kinds of blocks: (a) line blocks, which resemble a rubber stamp in that the raised portions provide the printing surfaces; (b) half-tones, which have a pattern of dots over them and, since it is possible to print only a uniform coating of ink on paper, the differences in the gradations of tone are brought about by differences in the size of the dots; (c) combination line and half-tones.

The etching machine now in use at M.H. Photo Engraving Ltd. is the Master M 32, first of its kind to be imported into New Zealand. It works on a different principle to most etching machines in that it has built-in refrigeration and heating, to keep acid and additives at the right temperature. Etching of a line block in this machine takes about 16 minutes, whereas the same work done by hand would take 2½ hours. Results to date have been notable for the uniformly high standard of quality attained.

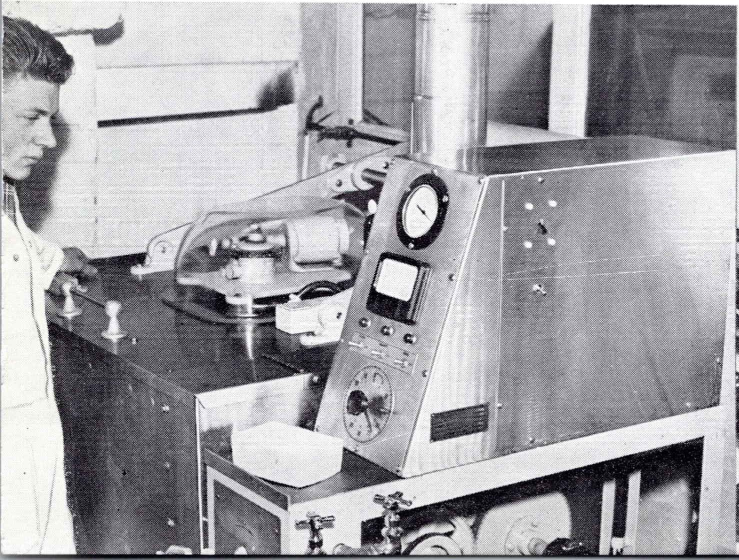
Following the etching process, the zinc plate is complete, the image of the photograph or art work showing on the metal. In the case of a line block, the waste metal is cut away on a routing machine (lower right). This machine is, in fact, a movable drill.

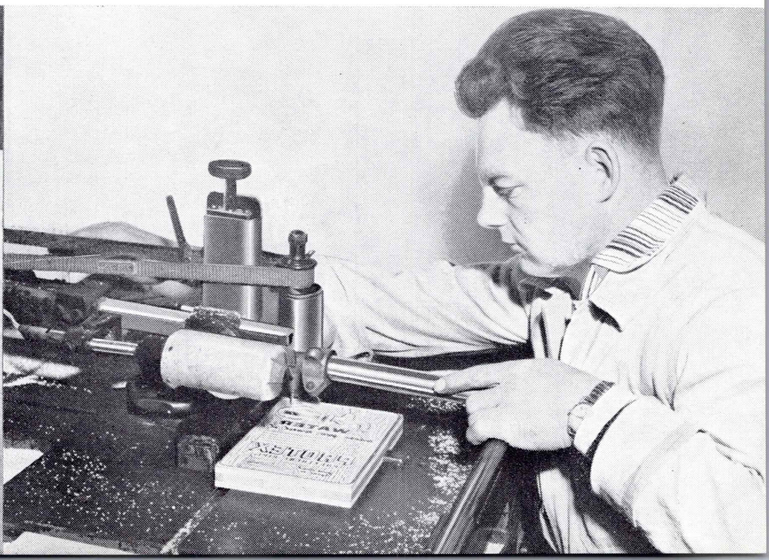
Finally, the plate is mounted on a wood or metal base to the height required by the printer for his machine.

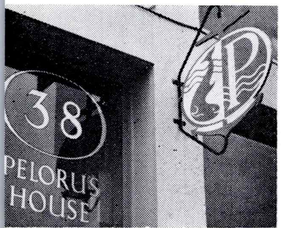
The quality of the block is governed to a large extent by the quality of the original phtograph, and the high standard achieved in the arts of photography, photoengraving, and printing in New Zealand is reflected in these pages.

Most of the blocks used in "Manufacturing in New Zealand" were made by M.H. Photo Engraving Ltd. The Company was founded in 1946, and, although the next few years were difficult ones, a steady build-up of equipment and experience has taken place. Today, with the installation of the M 32 Etching Machine and the latest vertical dark-room camera, the whole process — from the projection of the image to the final mounting of the block — is being carried out with equipment which is the latest the leading manufacturers have to offer.

D-101







38
PELORUS
HOUSE
40

THE PELORUS PRESS LTD • Airedale Street, Auckland

Shortly after World War II, the idea of establishing a printing concern of high order was conceived and in the latter part of 1947 the Pelorus Press partnership was born. The name Pelorus was chosen as being typical of New Zealand, while at the same time having a link with the earliest days of the printing craft. The sign of the dolphin and anchor was incorporated in the device of Aldus Manutius, a sixteenth century Venetian publisher of cheap but beautiful clear-type pocket-sized editions of the Greek and Latin classics. Therefore what better association with this time-honoured device than that of Pelorus Jack (the well-known Risso Dolphin) and Pelorus Sound, a safe anchorage in the South Island.

From the beginning, production of high quality printing has been the constant aim of the Press and every addition to plant has been a step in this direction. The first real home at Severn Street was a disused bakehouse, one of the first in the district and which used to supply bread to the Mt. Eden jail. Tenancy of this building was obtained by waiting outside while the previous tenant gave notice and then immediately making application! Although the premises were far from ideal for printing, they were made habitable by the addition of a staircase, ceiling lining and a colour wash to the walls.

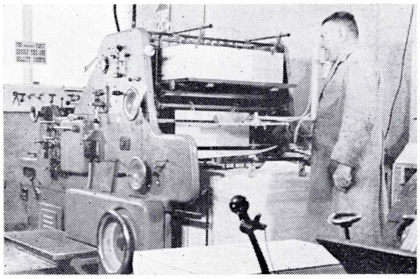
At this stage assistance obtained with a Rehabilitation loan was used to purchase a 20 x 30 in. Warfedale hand-fed press and a wider range of type. Not until 1949, again with additional Rehab. assistance, was it possible to instal the first modern automatic machine which, although small (10 x 15 in.) by larger printers' standards, made it possible for the firm to compete with confidence within its limited field. This innovation was followed shortly by a folding machine and in 1952 the addition of a small automatic cylinder press 18 x 13½ in. was another milestone.

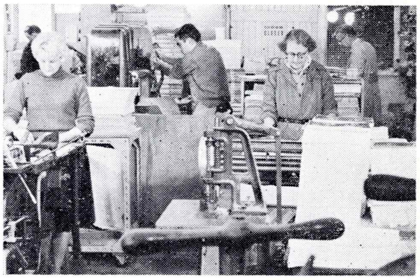
Serious production problems were ever present. Higher standard printing machines demanded better condition of paper, and the existing premises, with the problems of dampness and cold, of carrying stock and printing "formes" up and down stairs, all added to production costs.

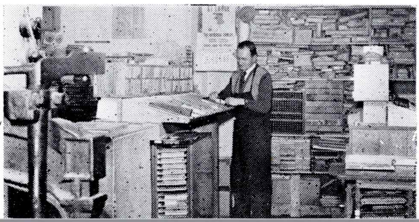
However, not until the end of 1955 was it possible to move to the present modern premises at 38 Airedale Street (above). A modern heavy guillotine was immediately installed and the following year a 15½ x 21 in. automatic printing press and a power operated perforating machine took their place on the shop floor. In 1957 the original folding machine was replaced by a larger, more versatile model and during 1958 the old 20 x 30 in. cylinder press was replaced by a modern automatic high speed press of the same size.

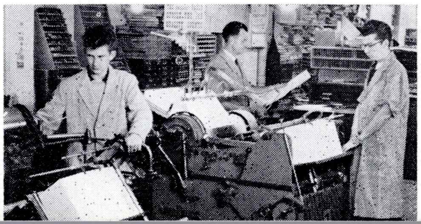
Although not so easy to record by way of major advances, all through these years, type and composing equipment were constantly receiving attention; new faces were being added to the existing range, equipment was being improved and the layout of the department streamlined until the present composing department (left below) was evolved, where the emphasis is always on good typography. A choice range of type faces — from an early Caslon design through the large range of Gill sans serif to the best of the contemporary — are assembled with skill and patience to make up the type "formes" for the printing presses (centre below). This versatile range of machines, the best obtainable in their size from the world's factories, print on many varieties of many-hued papers. The operation of these precision wonders of the machine age calls for skill, observation and a mechanical and artistic sense.

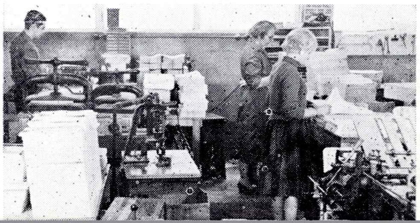
Paper, in all its multitudinous grades, grains and colours is warehoused and cutting is done in the Bindery Department (right below). The guillotine, razor sharp, speedily parts large sheets in quantities of up to 1,000 at a cut, to the desired sub-division of the job on hand. After printing, sheets may go back to the bindery for further trimming, folding, perforation, punching or stapling as the finished job could be any one of a great number of printed products — a packet of 100 business cards, 10 invoice books, 50,000 travel folders, half-a-million four-colour bottle labels or a quantity of catalogues for an art exhibition.











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